

Blueprint:

Planned By:

Approved By:

SEQ

TASK OPERATIONS

OSP:No

10

**INVENTORY OUT**

Remove parts from inventory

**BILL OF MATERIAL**

Qty Per Assy: 1	C45-4-4A C45 LOAD BEAM ASSY
Qty Per Assy: 1	C45-1-1 Manual Release Knob
Qty Per Assy: 2	188-FPSS-1/4 20-3/8 18-8 SS -Flat Point Socket Setscrew- 1/4-20 x 3/8"
Qty Per Assy: 1	C60-2-1 Sideplate - MRK
Qty Per Assy: 4	AN5-21A Bolt
Qty Per Assy: 8	AN960-516 WASHER, [5/16]
Qty Per Assy: 4	MS21044-N5 Nut
Qty Per Assy: 2	C60-3-1 Radial Bearing
Qty Per Assy: 1	C45-3-2 Latch Roller Pin
Qty Per Assy: 1	C45-3-3 Latch Roller
Qty Per Assy: 2	C3-12-6 Lock Roller Pin Circlip
Qty Per Assy: 2	C45-3-4 Link Pin
Qty Per Assy: 4	C45-3-4-1 Link Pin Retaining Ring
Qty Per Assy: 2	C45-3-5 Nylon Spacer - Latch
Qty Per Assy: 1	C45-3-6 Latch
Qty Per Assy: 1	C45-3-7 Link
Qty Per Assy: 1	C45-3-8A Actuator Shaft Bushing
Qty Per Assy: 1	C45-3-8B Actuator Shaft Bushing - Solenoid Side
Qty Per Assy: 1	C45-3-9 Actuator Shaft Spring
Qty Per Assy: 1	C60-3-10 Latch Shaft
Qty Per Assy: 1	C45-3-11 Actuator
Qty Per Assy: 1	C45-3-12 Latch Roller Bearing
Qty Per Assy: 2	C45-4-1 Trunnion Bushing
Qty Per Assy: 1	C45-4-5 Loadbeam Spacer
Qty Per Assy: 0	32446 22-16 AWG Knife Connector
Qty Per Assy: 1	C45-5-2 Lever Stop Bushing
Qty Per Assy: 1	C45-7-1 Loadbeam Bumper
Qty Per Assy: 2	C45-7-2 Lock Bumper
Qty Per Assy: 2	C45-8-1-2 SOLENOID NUT
Qty Per Assy: 1	C45-8-2 Solenoid
Qty Per Assy: 2	AN4-23A Bolt
Qty Per Assy: 1	MS27039-4-08 Screw
Qty Per Assy: 3	AN960-416 STEEL WASHER
Qty Per Assy: 1	C45-8-4 Solenoid Cover Gasket
Qty Per Assy: 1	C45-8-5 Solenoid Cover
Qty Per Assy: 1	C45-9-1 Clock Spring Cover
Qty Per Assy: 4	188-FSCS-1032-5/8 92210A303 FLAT POINT SOCKET SCREW

<b>Apical Industries, Inc.</b>		<b>MANUFACTURING PRODUCT TEMPLATE</b> C60 Remote Cargo Hook - 6000 Lbs  <b>PN: C60</b> <b>Desc: Remote Cargo Hook - 6,000 Lb</b> <b>Rev: A</b> <div style="text-align: right;">             Printed: 1/26/2012              Time: 2:47:40 PM           </div>	
<b>Blueprint:</b> <b>Planned By:</b> <b>Approved By:</b>			
	Qty Per Assy:	1	C45-9-2 Clock Spring
	Qty Per Assy:	1	C45-10-1 Lock Spring Pin
	Qty Per Assy:	1	C60-10-2 Lock Spring
	Qty Per Assy:	1	C60-11-1 Sideplate - Solenoid Side
	Qty Per Assy:	2	C45-11-2 Locating Pin
	Qty Per Assy:	2	C45-12-1 Lock Bushing
	Qty Per Assy:	1	C45-12-2 Lock Shaft
	Qty Per Assy:	1	C60-12-3 Lock
	Qty Per Assy:	1	C45-12-4 Lock Roller
	Qty Per Assy:	1	C45-12-5 Lock Roller Pin
	Qty Per Assy:	2	C45-12-6 Lock Roller Pin Circlip
	Qty Per Assy:	2	C45-13-1 Keeper Bushing
	Qty Per Assy:	2	C45-13-2 Nylon Spacer - Keeper
	Qty Per Assy:	1	C45-13-3 Keeper Shaft
	Qty Per Assy:	1	C45-13-4 Keeper
	Qty Per Assy:	1	C45-13-5 Keeper Spring
	Qty Per Assy:	1	600.1309 CANAM PLATE ID LABEL
	Qty Per Assy:	2	C45-14-2 Label Rivet
	Qty Per Assy:	1	600.1312 C45 WARNING LABEL
	Qty Per Assy:	2	32446 22-16 AWG Knife Connector
	Qty Per Assy:	2	32448 16-14 AWG Knife Connector
	Qty Per Assy:	1	C10-43 Strain Relief O-Ring
	Qty Per Assy:	0	C10-42 Strain Relief Nut
	Qty Per Assy:	1	C10-41 Strain Relief Connector
	Qty Per Assy:	1	EL314-SJTOW Electrical Wire 3/14 SJTOW
	Qty Per Assy:	1	EL-PLUG-M 3-Prong Male Spade Plug
	Qty Per Assy:	1	C45-5-1A LEVER STOP- DOWEL PIN
	Qty Per Assy:	1	EL-PLUG-M 3-Prong Male Spade Plug
<b>20</b>	<b>Assembly Documentation</b>		<b>OSP:No</b>
	Print appropriate assembly & test sheets.		
<b>30</b>	<b>Assembly</b>		<b>OSP:No</b>
	Assemble IAW CMM		
<b>40</b>	<b>In Process Inspection</b>		<b>OSP:No</b>
	Assembly must be inspected prior to lubricating and testing mechanism.		
<b>50</b>	<b>Test</b>		<b>OSP:No</b>
	Test assembly IAW CMM. Record results on test sheet.		
<b>60</b>	<b>Documentation &amp; Time Log</b>		<b>OSP:No</b>

Blueprint:

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Approved By:

Include owners manual, CRC. Sign off traveller.

70 Pre-Inspection

OSP:No

80 Final Inspection

OSP:No

90 INVENTORY IN

Place parts into inventory.

OSP:No



2608 TEMPLE HEIGHTS DRIVE  
OCEANSIDE, CALIFORNIA 92056-3512  
PH: (760) 724-5300 FAX: (760) 758-9612  
Website: [apicalindustries.com](http://apicalindustries.com)

OM-C60  
Rev. A  
05/19/11

## **Owner's Manual**

### **Canam C60 Remote Cargo Hook**

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### DETAILS OF REVISIONS

<b>Rev.</b>	<b>Date</b>	<b>Page</b>	<b>Description</b>	<b>Approved</b>
N/C	05/06/09	All	Initial Release	P. Bravo
A	05/19/11	All	Was Rev N/C on 05/06/09 Is Rev A on 05/19/11	P. Bravo
		3	Revised List of Effective Pages	
		9	Revised Section 3.0 Introduction	
		10	Revised Section 3.3	
		13	Added Section 4.4	
		17-19	Added Figures 2,3,4,5,6,7	

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## LIST OF EFFECTIVE PAGES

<b>Title</b>	<b>Page</b>	<b>Revision No.</b>
Cover	1	A
Detail of Revisions	2	A
List of Effective Pages	3	A
Table of Contents	4	A
Section 1 Introduction	5	A
Section 2 Technical Data	6	A
Section 3 Maintenance	9	A
Section 4 Miscellaneous	11	A
Section 5 C60 Parts List	14	A



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1.2	PRODUCT FEATURES .....	5
1.3	DESIGN FEATURES .....	6
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## **Section 1.0: Introduction**

**LIGHT WEIGHT (16.5 lbs.)**  
**LONG LINE HOOK LIFT CAPACITY: 6000 lbs. (2721 kg)**

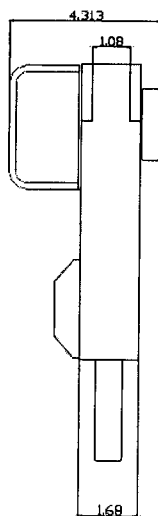
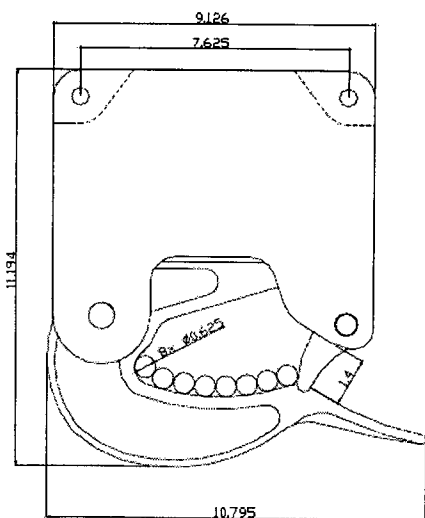
- 1.1 PURPOSE:** The Canam C60 Cargo Hook has been designed to engage, lift, transport and release external loads off a cable suspended from a helicopter.

### **NOTE:**

Use only as a Long Line Hook! The C60 Cargo Hook is not certified as a primary or belly hook attached to the helicopter.

## **1.2 PRODUCT FEATURES:**

The C60 Hook is encased by a pair of housing plates bolted together.



The internal parts are made of high quality steel that has been heat treated and plated.

The toggle mechanism assures the positive lock of the hook, and an amplification of opening forces.

The adjustable clock spring allows the Load Beam to be returned automatically. The stainless steel spring is fully protected from the elements and hazardous snags by a cap that is tapered and attached by four screws. The tension can be increased or decreased as required.

Our standard Load Beam with oversized throat will accommodate up to 8 eye chokers, 5/8 inches in diameter. Throat opening is 1.4" (35mm).

Releasing loads can be performed manually (manual release knob), or electrically (solenoid).

Canam's cargo hooks incorporate the highest quality materials and precision engineered for maximum strength and endurance. Each unit is proof tested prior to

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shipment.

### 1.3 DESIGN FEATURES:

The C60 Hook contains only five moving parts. Fewer parts mean less down time and reduced maintenance costs. Due to the simplified design and parts replacement, our remote hooks are easy to service and repair during field maintenance.

### 1.4 PRECAUTIONS

The following precaution definitions will be used to indicate the seriousness of the hazard or condition

**WARNING:** May be a maintenance procedure, practice, condition, etc., which could result in personal injury or loss of life.

**CAUTION:** May be a maintenance procedure, practice, condition, etc., which could result in damage or destruction of equipment.

**NOTE:** May be a maintenance procedure, practice, condition, etc., which or a statement that needs to be highlighted.

## **Section 2.0: Technical Data**

### 2.1 SPECIFICATIONS:

Lift capacity:	6,000 lbs. (2,721kg)
Design Ultimate Strength:	30,000 lbs. (13,608 kg)
Minimum release load:	15 lbs. (6.8 kg)
Mounting:	Dual Point
Voltage:	24/28 V -D.C.
Current:	14 A

**Inner Ring diameter size of 4 inches is required**

### 2.2 DIMENSIONS:

Weight:	16.5 lbs. (7.5 kg)
Height:	11.2 inches. (284mm)
Thickness:	1.08 inches. (27.4mm) At lifting points 1.68 inches. (42.7mm) At bottom 4.30 inches. (109mm) Knob to solenoid cover
Length:	9.125 inches. (232mm) 7.625 inches. (193.6mm) center of lifting points

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## **2.3 RELEASE:**

### **ELECTRICAL**

Electrical releases are accomplished by supplying 22 to 28 V DC to a rotary solenoid. The solenoid has an internal resistance at 20°C is 1.89  $\Omega$ . The maximum current drain would be:

$$28 \text{ V} / 1.89 \Omega = 14.8 \text{ A}$$

At 10% continuous duty, this unit has a gross available torque of 11 in. lbs. Using an Ohm-meter, check across the pins of the electrical receptacle to verify that electrical continuity exists.

### **MECHANICAL (GROUND RELEASE)**

It is possible to release loads to the rated capacity of 6,000 lbs. by turning the Manual Release Knob.

### **WARNING**

**Prior to operating the manual release, ensure that you are not in the path of the load.**

### **NOTE:**

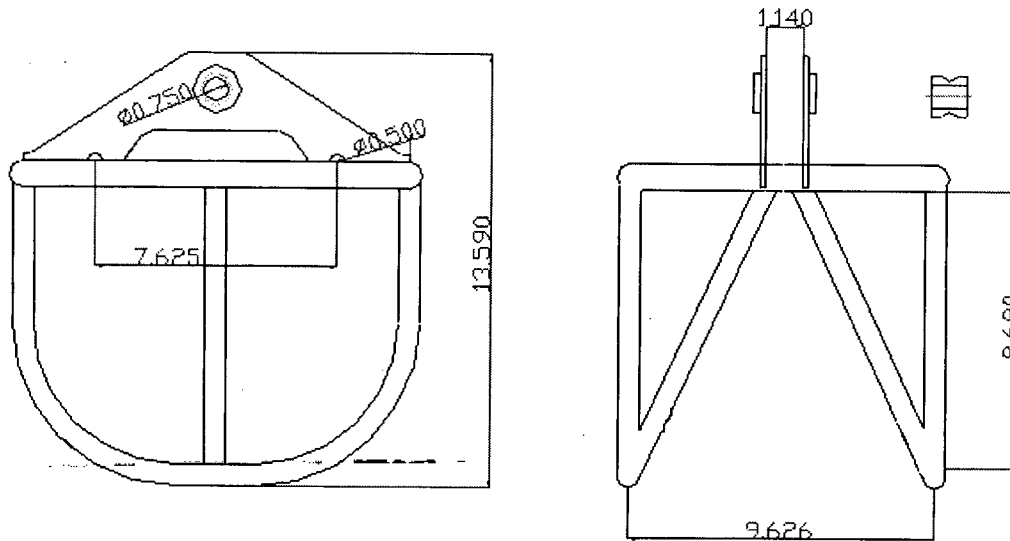
Electrical connections and wiring are to be supplied by end user unless specifically requested.



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## 2.4 CAGE:



**2.4.1 Cage Weight:** 11 lbs. (5 kg)

**2.4.2 Cage Material:** 5/8" Tubular Steel

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### **Section 3.0: Maintenance**

Care should be exercised during handling of the hook to prevent damage to moving or supportive parts. When the hook is in use, clean it daily and apply grease to the end of the Load beam, where it engages the lock.

**The overhaul interval for cargo hooks is 3 years or 1500 hrs, whichever comes first. Any cargo hook showing indications of excessive wear, abuse or damage must be removed immediately for on-condition overhaul or repair prior to scheduled maintenance.**

The repair and/or overhaul must be completed using any one (1) of the following two (2) methods:

- I. By sending the hook to an approved facility or returning it to Apical Industries.
- II. Operator-may-perform repair and/or overhaul using an Apical Industries C60 Overhaul Kit (P/N: 648.4705) in accordance with Apical's Operator Overhaul Procedure Manual for the Canam C60 Remote Cargo Hook (Document: OOPM-C60).

#### **3.1 INSPECTION:**

- Conduct a visual inspection of the outside the hook assembly. Check for nicks, burrs, cracks or looseness of parts.
- Insure that the mechanism works, rotating the Manual Release Knob, while applying hand pressure on the Load Beam.
- Electrically: use an Ohm-meter, check the continuity and resistance of the solenoid. Connect the meter to the wire leads. Solenoid resistance should be 1.83 to 2.23Ω. If the resistance is 1.5Ω or less, there is a possible short, which may result in too much current draw and over heat.

#### **3.2 DISASSEMBLY:**

No special tools are required:

- ½ wrench
- ½ socket wrench
- # 2 Philips screw driver

Loosen housing nuts 4 places.  
Remove Manual Release Knob.  
Remove screw hidden behind Knob.

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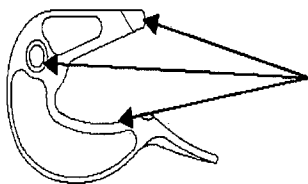
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Take off cover side (opposite solenoid side).  
Entire inner mechanism is now totally exposed.

Remove parts one piece at a time, clean off grease and grime using mild cleaning solvent or bath. Blow off excessive cleaner and towel dry.

### 3.3 VISUAL INSPECTION:

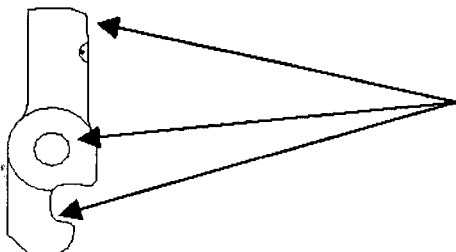
Visually inspect parts for wear on areas listed below:



#### 3.3.1 Load Beam:

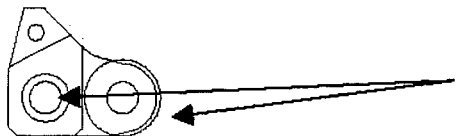
Nose, Trunnion and Choker areas

Load beam nose should be smooth and free of burrs or divots caused by lock. Angle should be set as per manufacturers specifications. Trunnion should remain pressed in and not wobbly.



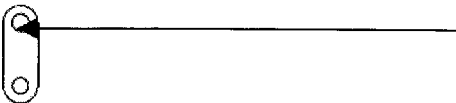
#### 3.3.2 Lock:

Latch roller, Load beam and Lock shaft contact areas  
Lock at Load Beam face should remain smooth and at the proper angle. Contact point where latch roller contacts the load beam should not be distorted.



#### 3.3.3 Latch:

Roller, pivot hole and bearings.  
Latch roller rotation and divots on roller surface.  
Latch side plate bearings should have smooth rotation.



#### 3.3.4 Link:

Link holes should be checked for elongation and worn pins. Bushings should be checked for fitting into side plates and for holes elongation. Pins should be checked for wear and fitting.

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### 3.4 SOLENOID REMOVAL:

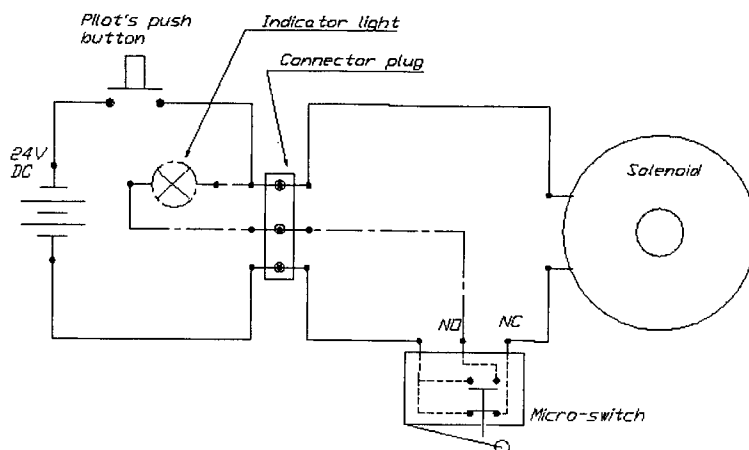
- 3.4.1. Remove solenoid cover: 3 bolts ¼ "
- 3.4.2. Pull out solenoid .The solenoid is located in place by round nuts mounted on the studs and held in place by the cover. Notice the rubber pad on the top of the cap. This gets pinched by the cover and held in place when the bolts are tight.
- 3.4.3. **(Optional)** If "Solenoid quick removal" feature has not been requested, the opening of the hook is necessary to remove the headed nuts of the solenoid's studs.
- 3.4.4 If any of the checked areas show signs of wear or over use replace parts or send unit back for evaluation and overhaul.

### 3.5 ASSEMBLY:

Work in reverse order of disassembly. Ensure all parts are clean and greased, when installing components.

## Section 4.0: Miscellaneous Information

### 4.1 WIRING DIAGRAM (Optional):



The pilot's push button switch for release is preferably mounted in one of the control levers for operation, so he can operate it without removal of the hands from the control. To prevent inadvertent operation, a guard may be mounted over the control button or a safety shut-off switch can be inserted in the circuit.

The circuit contains the solenoid safety micro-switch (Normally Closed – NC) that cuts the power off the solenoid in the open position of the release mechanism, and an optional wiring can be provided for an OPEN position indicator light (using the Normally Open–NO contact of the micro-switch).

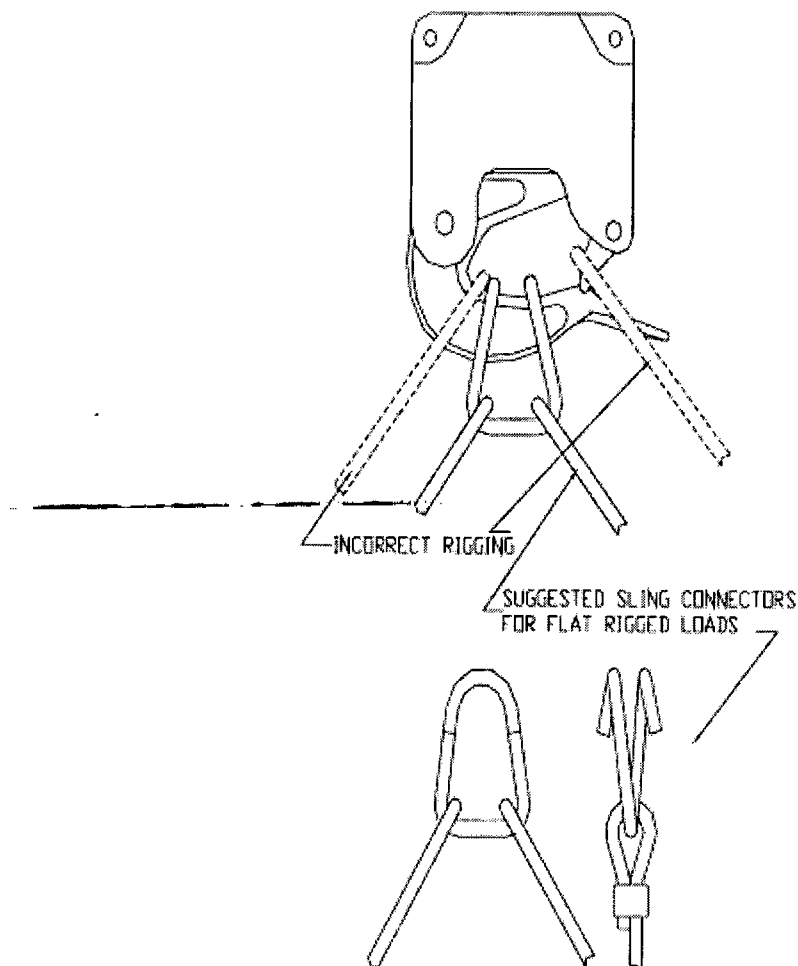
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**4.2 RIGGING:** When cable angle is flatter than  $45^\circ$ , a connector is recommended



#### 4.3 WARRANTY

Apical Industries will warranty the product for workmanship for a period of 1 year. Internal components installed and manufactured from other manufactures are not covered by Apical Industries and are subject to OEM warranties. Apical Industries reserves the right to evaluate the product subject to warranty.

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#### **4.4 KEEPERLESS ADAPTER (OPTIONAL):**

The Canam Model C60-K Remote Cargo Hook includes a keeperless adapter in which the Keeper remains fixed in place at all times. This eliminates the cargo hooks ability to add cables, rigging, and/ or connectors with the Load Beam in the locked position; i.e. the operator must disengage the Cargo Hook's locking mechanism to load the Cargo Hook and then re-lock the Load Beam in place.

All information presented in this document is applicable to both the Model C60 and C60-K Remote Cargo Hooks. The only notable exception comes in Section 5.0: C60 Parts List; Part numbers C60-13-4 (Keeper) and C60-13-5 (Keeper Spring) are exclusive to the Model C60 Remote Cargo Hook, while part number C60-15 (Keeperless Adapter) is exclusive to the Model C60-K Remote Cargo Hook.





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### **Section 5.0: C60 Parts List**

<b>Part #</b>	<b>Name</b>	<b>Qty.</b>
C60-1-1	Manual release knob	1
C60-1-2	Socket set screw	2
C60-2-1	Side plate	1
C60-2-2	Side plate bolts	4
C60-2-2-1	Side plate washers (not shown)	8
C60-2-2-2	Lock-Nuts (not shown)	4
C60-3-1	Radial Bearing	2
C60-3-2	Latch Roller Pin	1
C60-3-2-1	Roller Pin Retaining Rings (not shown)	2
C60-3-3	Latch Roller	1
C60-3-4	Link/latch-lever pin	2
C60-3-4-1	Link pin retaining rings (not shown)	4
C60-3-5	Teflon spacer. Latch	2
C60-3-6	Latch	1
C60-3-7	Link	1
C60-3-8a	Actuator Shaft Bushing	1
C60-3-8b	Actuator Shaft Bushing (solenoid side)	1
C60-3-9	Lever spring	1
C60-3-10	Latch shaft	1
C60-3-11	Actuator	1
C60-3-12	DU Bearing	1
C60-4-1	Trunnion bushing	2
C60-4-2	Trunnion	1
C60-4-3	Load Beam – trunnion pin	1
C60-4-4	Load Beam	1
C60-4-5	Load Beam spacer	1
C60-5-1	Lever stop bolt	1
C60-5-2	Lever stop	1
C60-7-1	Load Beam bumper	1
C60-7-2	Lock Bumper	2
C60-8-1	Solenoid Nut	2
C60-8-2	Solenoid	1
C60-8-2-1	Bolt	2
C60-8-2-2	Bolt	1
C60-8-2-3	Washers	3
C60-8-3	Actuator Pin	1
C60-8-4	Solenoid cover gasket	1

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Part #	Name	Qty
C60-8-5	Solenoid cover	1
C60-8-6	Connector gasket (not shown)	1
C60-8-7	Connector (not shown)	1
C60-8-7-1	Connector bolts (not shown)	4
C60-9-1	Clock spring cover	1
C60-9-1-1	Spring cover bolts (not shown)	4
C60-9-2	Clock spring	1
C60-10-1	Lock spring pin	1
C60-10-2	Lock spring	1
C60-11-1	Slide plate solenoid	1
C60-11-2	Location Pins	2
C60-12-1	Lock bushing	2
C60-12-2	Lock shaft	1
C60-12-3	Lock	1
C60-12-4	Lock roller	1
C60-12-5	Lock roller pin	1
C60-12-6	Roller Pin Retaining Rings (not shown)	2
C60-13-1	Keeper bushing	2
C60-13-2	Teflon keeper spacer	2
C60-13-3	Keeper shaft	1
C60-13-4	Keeper	1
C60-13-5	Keeper spring	1
C60-14-1	Label (not shown)	1
C60-14-2	Label rivets (not shown)	2
C60-14-3	Caution Sticker	1
C60-15	Keeperless Adapter	1

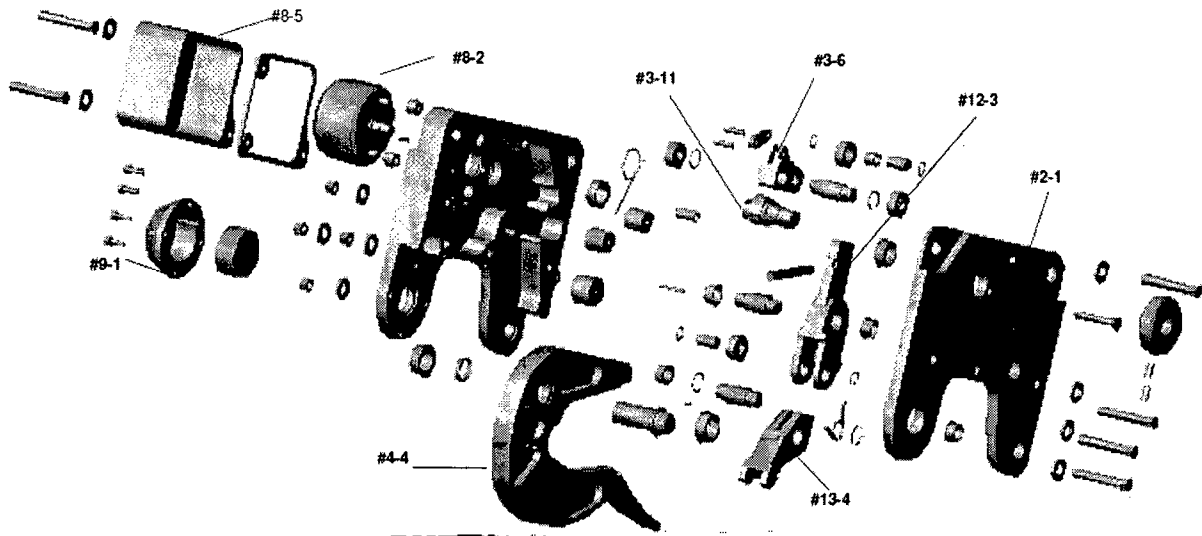
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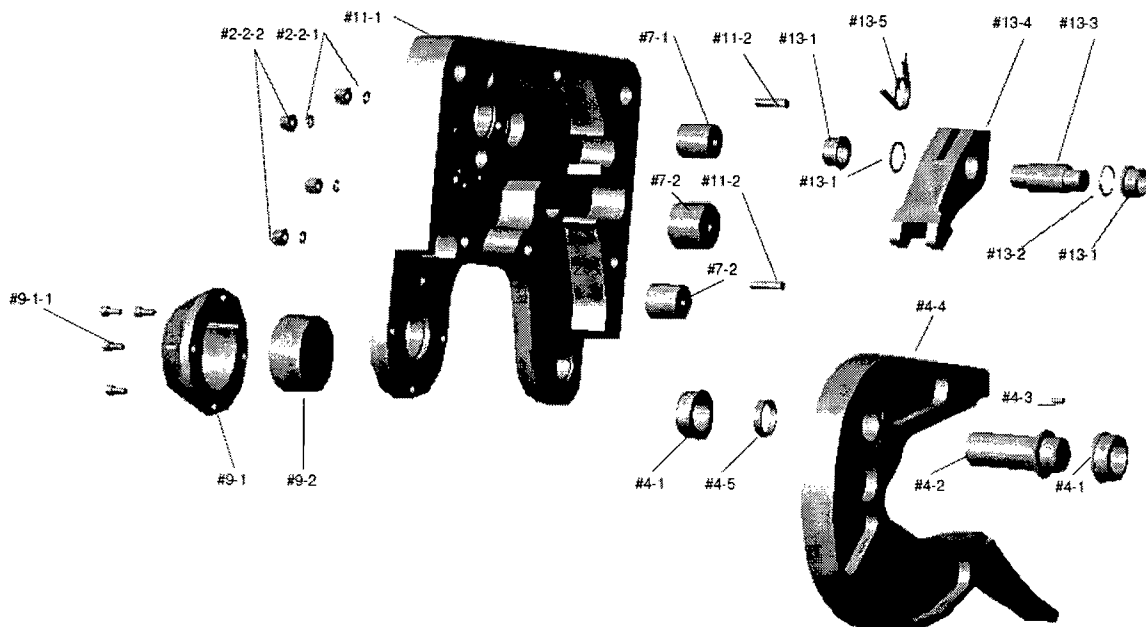


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**Figure 2: Assembly Overview**



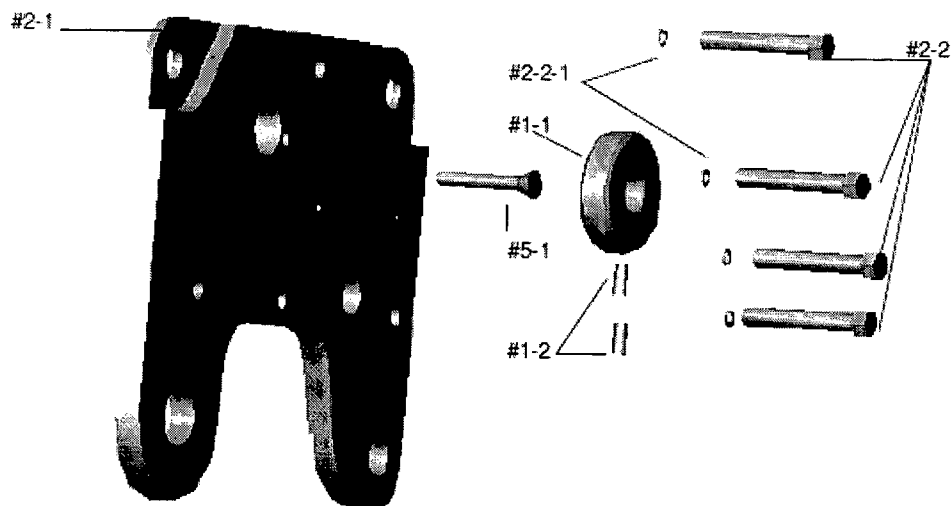
**Figure 3: Side Plate (Solenoid Side)**

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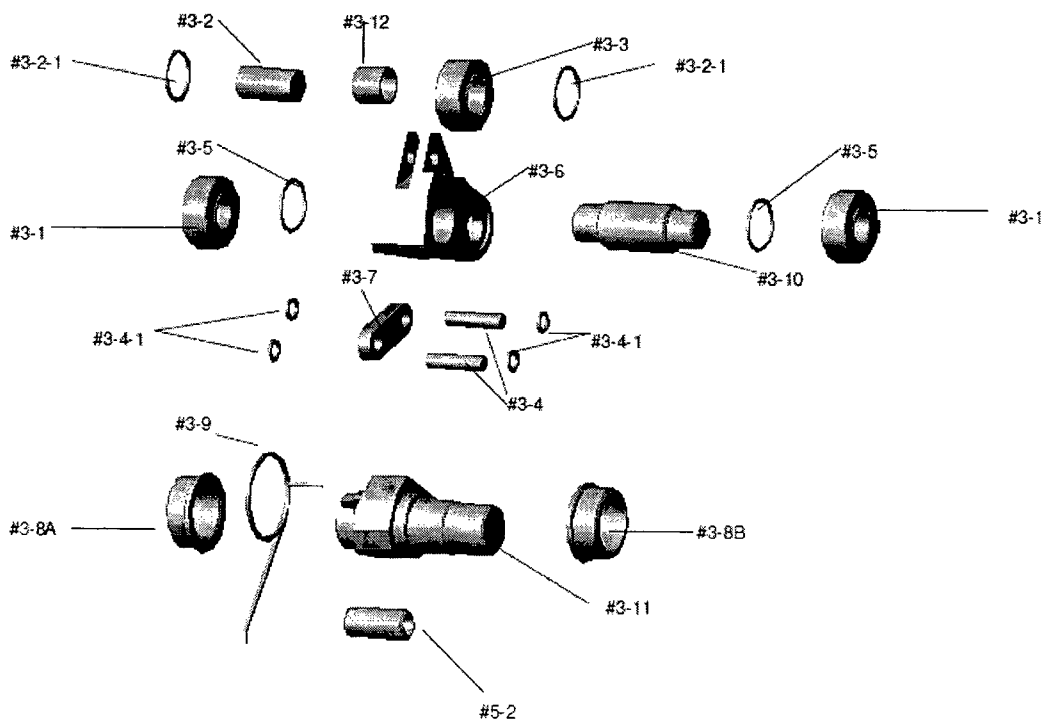


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**Figure 4: Side Plate (MRK Side)**



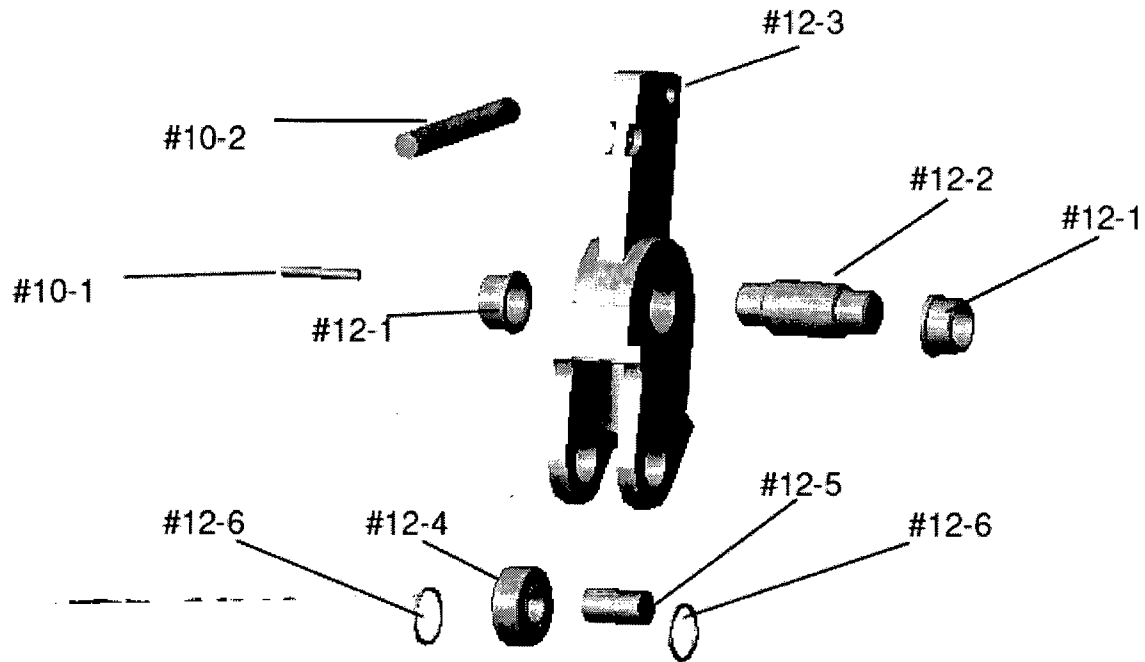
**Figure 5: Latch & Actuator Shaft Assembly**

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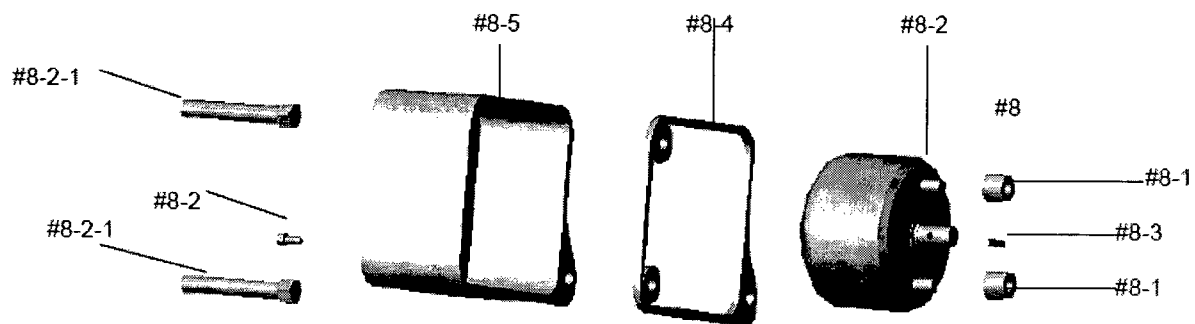


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**Figure 6: Lock Assembly**



#8-2-3 washers not shown

**Figure 7: Solenoid Assembly**

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# **OPERATOR OVERHAUL PROCEDURE MANUAL**

**For**

## **Canam C60 Remote Cargo Hook**

OOPM-C60

Rev. A

06/13/11

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		6	Revised Section 2.2 Revised Table 2.1	





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## 1 Introduction

### 1.1 Purpose

The purpose of this document is to provide the customer with a detailed set of instructions necessary to complete the overhaul procedure for the Canam C60 Remote Cargo Hook. This may be used as an alternative to sending the C60 hook to an approved facility or returning it to Apical for overhauls.

**NOTE:** It will be assumed that the reader of this manual is familiar with the Canam C60 Remote Cargo Hook Owner's Manual.

### 1.2 Precautions

The following precaution definitions will be used to indicate the seriousness of the hazard or condition:

**WARNING:** May be a maintenance procedure, practice, condition, etc., which could result in personal injury or loss of life.

**CAUTION:** May be a maintenance procedure, practice, condition, etc., which could result in damage or destruction of equipment.

**NOTE:** May be a maintenance procedure, practice, condition, etc., or statement which needs to be highlighted.

### 1.3 Definitions

The following terminology will be used describe defects and imperfections:

**Corrosion:** Chemical action on the surface either resulting in discoloration, a surface of oxide or in an advanced degree of removal of the original surface metal.

**Crack:** Fissure, which does not quite separate the metal.

**Dent/Nick:** Depression of surface metal without removal of material.

**Distortion:** Deviation from original shape.

**Scratch:** Narrow, shallow marks or lines resulting from movement of a particle or object across a surface.

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## 2 Preparation

Before the overhaul process may begin, the following preparations must be made.

### 2.1 Required Items

The following items are required to complete the overhauling process as outlined in this manual:

- Apical C60 Overhaul Kit (P/N: 648.4705)
- Loctite #620 Retaining Compound
- Loctite #242 Threadlocker
- Metalon Hi-Tech EP 1.5 Grease (or similar)
- SAF-T-EZE Copper Anti-Seize (or similar)
- Vinyl Electrical Tape
- Standard Ohmmeter
- Parts Washing Solvent
- Aluminum Oxide 100/200/400, or Scotch Brite
- Raychem RNF-100 Heat-Shrink Tubing .25"exp - .125"rec (or equivalent)

### 2.2 Parts List and Assembly Figures

A copy of the complete parts list and assembly figures found in the C60 Remote Cargo Hook Owner's Manual are included at the end of this document. They may be used as a reference source at any time.

Table 2.1 below lists all the parts contained in the Apical C60 Overhaul Kit (P/N: 648.4705). It is recommended that this table be used to verify that all parts are present.

PART #	NAME	QTY. (648.4705)
C60-1-2	Socket set screw	2
C60-2-2	Side plate bolts	4
C60-2-2-1	Side plate washers	8
C60-2-2-2	Side Plate Nuts	4
C60-3-1	Radial Bearing	2

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C60-3-12	DU Bearing	1
C60-3-2-1	Roller Pin Retaining Rings	2
C60-3-4-1	Link pin retaining rings	4
C60-3-5	Teflon spacer Latch	2
C60-3-8A	Actuator Shaft Bushing	1
C60-3-8B	Actuator Shaft Bushing	1
C60-3-9	Lever spring	1
C60-4-1	Trunnion bushing	2
C60-5-1	Lever stop bolt/pin	1
C60-7-1	Load beam bumper	1
C60-7-2	Lock Bumper	2
C60-8-2-1	Cover Bolt	2
C60-8-2-2	Solenoid Cover Screw	1
C60-8-2-3	Washers	3
C60-8-4	Solenoid cover gasket	1
C60-9-1-1	Clock Spring Cover Screws	4
C60-10-2	Lock spring	1
C60-12-1	Lock bushing	2
C60-12-6	Roller Pin Retaining Rings	2
C60-13-1	Keeper bushing	2
C60-13-2	Teflon keeper spacer	2
C60-13-5	Keeper spring	1
C60-14-1	Label	1
C60-14-2	Label rivets	2
600.1312	Caution Sticker	1

**Table 2.1 - Apical C60 Overhaul Kit Parts List**

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### 3 **Disassembly**

These disassembly procedures are for the complete disassembly of the hook assembly.

**NOTE: The term 'Remove' implies the temporary separation and/or un-installation of parts which are then reused later in the overhaul. The term 'Discard' implies the permanent disposal of a part and is reserved only for components which have a replacement found in the Apical C60 Overhaul Kit.**

#### 3.1 **Parts Removal**

- 3.1.1 Remove the Solenoid Cover (8-5) and Gasket (8-4) located in place by the Solenoid Cover Screw (8-2-2) and Cover Screw Washer (8-2-3), as well as the Cover Bolt (8-2-1), Solenoid Cover Washers (8-2-3).
- 3.1.2 Discard the Solenoid Cover Screw (8-2-2), Cover Screw Washer (8-2-3), Cover Bolt (8-2-1), and Solenoid Cover Washers (8-2-3).
- 3.1.3 Remove and discard the Caution Sticker (600.1312) placed just below, and to the left of the Manual Release Knob on the MRK Side Plate (2-1).
- 3.1.4 Turn the hook over and remove the Clock Spring Cover (9-1) located in place by four (4) Clock Spring Cover Screws (9-1-1).  
  
**NOTE: The spring is turned clockwise about half a turn. Be sure to hold the cover in place while removing screws.**
- 3.1.5 Discard the four (4) Clock Spring Cover Screws (9-1-1).
- 3.1.6 Turn the hook over and separate the Manual Release Knob (1-1) from the Actuator Shaft by removing the two (2) Set Screws (1-2). Discard the two (2) Set Screws (1-2).
- 3.1.7 Remove and discard the Side Plate Bolts (2-2), Side Plate Nuts(2-2-2), and Side Plate Washers (2-2-1).
- 3.1.8 With the Solenoid Side Plate (11-1) face down, separate and remove the MRK Side Plate (2-1) exposing the entire inner mechanism. Be careful not to disturb the parts inside.

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- 3.1.9 Remove the Keeper (13-4), Keeper Spring (13-5), Keeper Shaft (13-3), and two (2) Keeper Spacers (13-2).
- 3.1.10 Discard the two (2) Keeper Spacers (13-2) and the Keeper Spring (13-5).
- 3.1.11 Remove the Load Beam (4-4) and Load Beam Spacer (4-5).
- 3.1.12 Remove the Lock (12-3) and Lock Shaft (12-2).
- 3.1.13 Remove the Actuator Assembly (3-11) and the two (2) associated Latch Spacers (3-5). Discard the two (2) spacers.
- 3.1.14 Remove the Solenoid (8-2) located in place by the two (2) Solenoid Nuts (8-1). Do not discard the two (2) Solenoid Nuts, they will be reused in assembly.

## **3.2 Lock Disassembly**

- 3.2.1 Remove the Lock Shaft (12-2), from the Lock.
- 3.2.2 Remove and discard the Lock Spring (10-2).
- 3.2.3 Remove Lock Roller (12-4) and Lock Roller Pin (12-5) from Lock (12-3). Remove the two (2) Lock Roller Pin Retaining Rings (12-6) that secure the roller in place.
- 3.2.4 Discard the two (2) Lock Roller Pin Retaining Rings (12-6).

## **3.3 Actuator Shaft, Linkage & Latch Disassembly**

- 3.3.1 Remove and discard the Actuator Lever Spring (3-9).
- 3.3.2 Remove the Latch Roller Pin (3-2) by removing the two (2) Roller Pin Retaining Rings (3-2-1). Discard the two (2) Roller Pin Retaining Rings (3-2-1).
- 3.3.3 Remove Latch Roller DU bearing (3-12) from the Latch Roller (3-3). Discard the Latch Roller DU bearing (3-12).

**NOTE: The Latch Roller DU (3-12) is press fit inside the Latch Roller (3-3). It is recommended that an arbor press be used with an appropriately sized punch to separate these components.**

- 3.3.4 Remove the Link (3-7) and Link Pins(3-4) by removing the four (4) Link Pin Retaining Rings (3-4-1). Discard the four (4) Link Pin Retaining Rings (3-4-1).

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### 3.4 Side Plate Disassembly

3.4.1 Remove and discard the Load Beam Bumper (7-1) and the two (2) Lock Bumpers (7-2).

3.4.2 Remove the two (2) Location Pins (11-2), and the Lock Spring Pin (10-1).

**CAUTION: Pin press fittings may be very tight. Avoid excessive bending during removal, as this may result in permanent deformation or damage to the Pins and/or Side Plate. If any of the pins are too difficult to remove, leave them in place and proceed to the next step.**

3.4.3 Remove the Latch Shaft DU (3-1), Actuator Shaft Bushing (3-8b), Trunnion Bushing (4-1), Lock Bushing (12-1), and Keeper Bushing (13-1) from the Solenoid Side Plate using an arbor press and the appropriately sized bushing punches.

Remove the Latch Shaft DU (3-1), Actuator Shaft Bushing (3-8a), Trunnion Bushing (4-1), Lock Bushing (12-1), and Keeper Bushing (13-1) from the MRK Side Plate using an arbor press and the appropriately sized bushing punches.

Discard all bushings and bearings.

3.4.4 Remove and discard the two (2) ID Label Rivets (14-2). Remove the ID Label.

**NOTE: If the writing on the ID Label is clearly legible (i.e. the label is free from any major scratches, nicks, and/or dents) it may be reused. If not, stamp all label information onto the blank ID Label included in the Apical C60 Overhaul Kit and discard the old label.**

### 3.5 Sub Assemblies

3.5.1 The Clock Spring (9-2) needs to be removed from the Clock Spring Cover (9-1).

3.5.2 On the Solenoid wires, carefully remove and discard the layer of shrink tubing covering the terminal connections. Do not remove the terminal fittings. In the event that a terminal fitting needs replacing, use a 22-16 AWG Knife connector.

3.5.3 Remove and discard the layer of tape covering the seam between the Solenoid and the Solenoid Dust Cap. Remove Dust Cap.

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## 4 Cleaning

The Following cleaning instructions should be performed as described after completing Section 3. All dust, dirt, corrosion, rust and moisture must be removed, they will eventually cause the operational failure of the hook.

### 4.1 General Cleaning Procedures

- 4.1.1 Clean all metal parts with parts washing solvent or equivalent. Remove caked on dirt with a stiff-bristle or non-metallic brush.

**CAUTION: Because the solenoid is an electric component, use only minimal amounts of solvent. Clean by hand.**

- 4.1.2 Dry all parts thoroughly with a lint free cleaning cloth and blow off extra cleaning materials from hard to reach areas.
- 4.1.3 Ensure that all parts are free of rust, corrosion and abrasive matter. Remove minor surface corrosion, scratches and imperfections by polishing lightly with abrasive cloth.

## 5 Check and Inspection

### 5.1 Parts Replacement

**NOTE: This section is mandatory.**

Ensure that the following parts have been properly discarded (as per section 3) and replaced with the parts found in the Apical C60 Overhaul Kit (if applicable):

- All hardware (nuts, bolts, washers, screws, retaining rings)
- All nylon spacers
- All bearings
- All gaskets
- All bumpers
- Solenoid nuts, pin & retaining rings
- All springs (Except Clock Spring)
- All updated parts
- Rivets and stickers
- Load Beam Trunnion & Lock Bushings

### 5.2 Visual Inspection

**NOTE: This section is mandatory.**

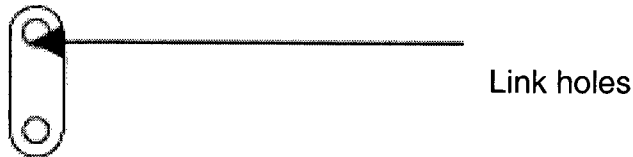
Visually inspect all parts for wear and tear. Any component showing excessive wear, abuse, cracks, corrosion, or damage must be removed and replaced before overhauling can resume. The following parts should be given special attention as outlined below.

#### 5.2.1 Latch



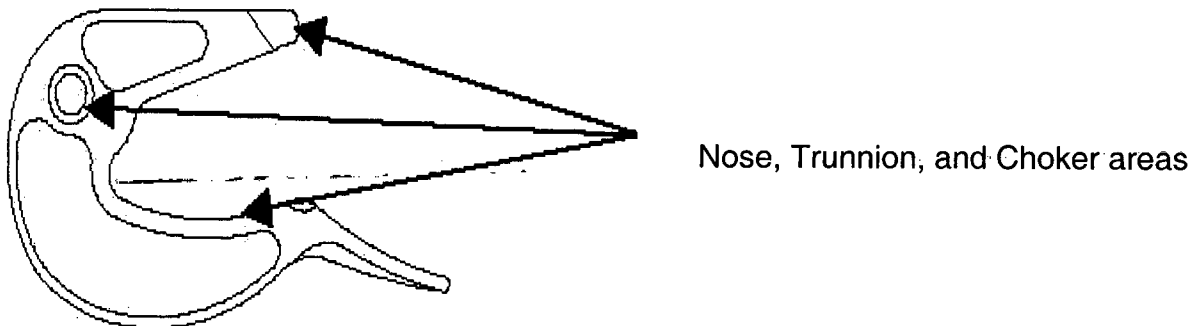
Check for Latch Roller rotation and divots on roller surface. Latch side plate bearings should have smooth rotation.

### 5.2.2 Link



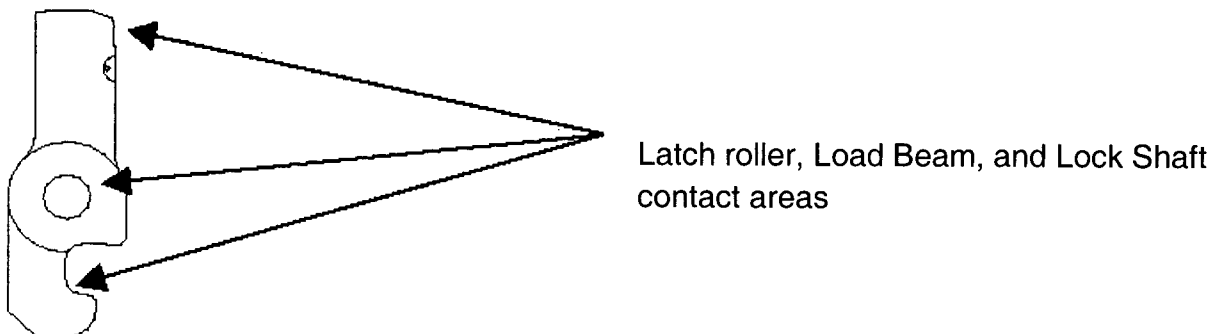
Check for elongation and worn pins. Bushings should be checked for fitting into side plates and for holes elongation. Pins should be checked for wear and fitting.

### 5.2.3 Load Beam



Load beam nose should be smooth and free of burrs or divots caused by lock. Trunnion should remain pressed in and not wobbly.

### 5.2.4 Lock



Load Beam face should remain smooth and free of burrs or divots. Contact point where latch roller contacts the load beam should not be distorted.



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### 5.3 Solenoid Inspection

**NOTE: This section is mandatory.**

Ensure that the Solenoid has been thoroughly cleaned and re-greased, then connect an ohmmeter to the wire leads. Solenoid resistance must be 1.8 to 2.3 ohms. If the resistance is less, or more, there is a possible short which may result in too much current draw and overheat the unit.

If the resistance criteria listed above cannot be satisfied, the Solenoid must be replaced.

### 5.4 Non Destructive Testing

**NOTE: This section is mandatory.**

The following parts must be sent out for NDT (Non Destructive Testing) and replaced upon failure:

- Both Side Plates
- Load Beam
- Keeper Shaft
- Link
- Link Pins
- Latch
- Latch Roller
- Latch Roller Pin
- Latch Shaft
- Lock
- Lock Shaft
- Lock Roller
- Lock Roller Pin

### 5.5 Re-Plating

The following parts are subject to re-plating only when necessary due to wear and plating loss:

- Link and Link Pins
- Latch
- Lock
- Load Beam
- Keeper
- Latch Shaft
- Lock Shaft
- Keeper Shaft
- Lever Stop Bushing

**NOTE: Some newer parts will not require plating; the Latch, Actuator Shaft, Link, and Link Pins may be made out of stainless steel.**

**NOTE: Apply electro less nickel plate to a thickness of 0.0005in to 0.0007in. Bake at 375F as required for hydrogen embrittlement relief.**

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## **6     Re-Assembly**

**NOTE:** Ensure that all previous sections have been properly completed before beginning the re-assembly process outlined below.

### **6.1     Side Plate Preparation**

- 6.1.1 Apply Loctite to faying surfaces of Latch Shaft DU (3-1) and Solenoid Side Plate and press fit in place. Ensure that the ends of the Latch Shaft DU are flush to the cavity surface of the side plate.
- 6.1.2 Apply Loctite to faying surfaces of Actuator Shaft Bushing (3-8b), Trunnion Bushing (4-1), Lock Bushing (12-1), Keeper Bushing (13-1), and Solenoid Side Plate and press fit in place. Ensure that all bushings are flush, or below, the surface of the side plate. Remove any excess Loctite from side plate.
- 6.1.3 Repeat steps 6.1.1 and 6.1.2 for the MRK Side Plate.
- 6.1.4 Apply grease to faying surfaces of the two (2) Location Pins (11-2), the Lock Spring Pin (10-1), and the Solenoid Side Plate. Fit in place and remove any excess grease.
- 6.1.5 Apply grease to faying surfaces of the Load Beam Bumper (7-1), the two (2) Lock Bumpers (7-2), and the Solenoid Side Plate. Press fit in place and remove any excess grease.
- 6.1.6 Install Lever Stop Pin (5-1) and Lever Stop Bushing (5-2).

### **6.2     Solenoid Assembly Installation**

- 6.2.1 Using a small brush or Q-Tip, apply grease to the Solenoid bearing surface between the housing and shaft. Reinstall Dust Cap.
- 6.2.1 Wrap a layer of vinyl electrical tape around the outer surface of the Solenoid Assembly covering the seam between the Solenoid and the Solenoid Dust Cap.
- 6.2.2 Temporarily install the solenoid assembly onto the back (outer facing surface) of the Solenoid Side Plate and check that neither end of the Solenoid Pin (8-3) come in contact with the Actuator Bushing. Remove and adjust as necessary.

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**NOTE: When installed, the wires extending from the Solenoid Assembly should be pointing down (i.e. towards the Load Beam [not yet installed]).**

6.2.3 Apply grease to inner surface of Actuator Bushing.

6.2.4 Apply Anti-Seize to faying surfaces of the Solenoid Assembly and the Solenoid Side Plate. Install using Solenoid Nuts (8-1). Apply Loctite # 242 Threadlocker to keep the nuts from loosening off. Torque to 30 in. lbs.

### **6.3 Latch & Actuator Shaft Assembly Installation**

6.3.1 Apply Loctite to faying surfaces of Latch Roller DU (3-12) and Latch Roller (3-3) and press fit in place. Ensure that it is flush to the surface of Latch Roller.

6.3.2 Fit Latch Roller Pin (3-2) into Latch Roller DU. Polish pin if necessary.

6.3.3 Fit assembled roller into Latch (3-6) and check to make sure there is clearance. Roller should not rub on inside of Latch.

6.3.4 Install Latch Roller Pin Retaining Rings (3-2-1) on each end of the Latch Pin.

6.3.5 Install one end of the Link (3-7) to the Latch Assembly using a Link Pin (3-4). Install Link Pin Retaining Rings (3-4-1) on each end of the Link Pin.

6.3.6 Install the opposite end of the Link (3-7) to the Actuator (3-11) using a Link Pin (3-4). Install Link Pin Retaining Rings (3-4-1) on each end of the Link Pin.

6.3.7 Apply grease to inner surface of Latch Shaft DU.

6.3.7 Insert Latch Shaft (3-10) into Latch and place a Nylon Washer (3-5) onto both ends of the Latch Shaft. Apply grease to all faying surfaces and hold in place.

6.3.8 Place the Actuator Lever Spring (3-9) onto the Actuator and hold in place.

6.3.9 Install the Latch & Actuator Shaft Assembly onto the Solenoid Side Plate.

**NOTE: Be sure that both the Nylon Washers and the Actuator Lever Spring remained in the correct position during installation.**

6.3.10 Ensure free and proper movement when the Actuator is twisted from side-to-side. Actuator should rest on the Actuator Stop Pin when in the closed position.

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6.3.11 Apply Anti-Seize over the entire surface of the Latch Roller (3-3).

6.3.12 Grease all other Latch & Actuator Shaft Assembly parts.

## **6.4 Lock Assembly Installation**

6.4.1 Assemble Lock Roller (12-4) onto Lock (12-3) using Lock Roller Pin (12-15). Check to make sure that there is clearance between the Lock Roller and Lock.

6.4.2 Insert Lock Roller Pin Retaining Rings (12-6) on each end of the Lock Roller Pin.

6.4.3 Attach one end of the Lock Spring (10-2) to the spring hole on the Lock.

6.4.4 Temporarily insert Lock Shaft (12-2) into Lock and ensure that it is a slip fit.

6.4.5 Apply grease to inner surface of the Lock Bushing on the Solenoid Side Plate and install Lock Shaft (separate from Lock Assembly).

6.4.6 Align Lock Assembly with the Lock Shaft and install onto to Solenoid Side Plate. Apply grease to faying surfaces.

6.4.7 Loop the free end of the Lock Spring around the Lock Spring Pin (10-1) and slide it down into place. Apply a small coating of grease to the Lock Spring.

6.4.8 Apply Anti-Seize over the entire surface of the Lock Roller (12-4). Apply anti-seize onto the Lock surface that comes in contact with the Latch Roller (3-3).

## **6.5 Parts Installation**

6.5.1 Apply grease to inner surface of the Solenoid Sid Plate Trunnion Bushing and install Load Beam Spacer (4-5) and Load Beam Assembly (4-4).

**NOTE: At this point, test to make sure the Load Beam will lock into place and release correctly. Once it is determined that all inner mechanisms are functioning properly return the Load Beam to its locked position.**

6.5.2 Assemble the Keeper (13-4), Keeper Spring (13-5), Keeper Shaft (13-3), and two (2) Keeper Spacers (13-2). Set aside.

6.5.3 Apply grease to inner surface of the Solenoid Sid Plate Keeper Bushing (13-1) and install Keep Assembly (13-4).

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- 6.5.4 Trim the end of the Keeper Spring so that its size allows it to be comfortably, yet tightly, held in place against the side wall of the Solenoid Side Plate.
- 6.5.6 Apply grease to the MRK Side Plate Latch Shaft DU, Actuator Shaft Bushing, Trunnion Bushing, Lock Bushing, and Keeper Bushing.
- 6.5.7 Install MRK Side Plate and remove any excess grease from the exterior surfaces.

**NOTE: Ensure that the Keeper Spring remains in the proper position during placement of the MRK Side Plate.**

- 6.5.8 Turn the hook assembly over and install the Clock Spring (9-2) and Clock Spring Cover (9-1) making sure that the Clock Spring tang is properly seated in the slot of Trunnion (4-2). Freely apply grease to all Clock Spring faying surfaces.
- 6.5.9 Rotate the Clock Spring Cover in a clockwise motion (about one half turn) until the set screw holes are aligned. Install the four (4) Set Screws (9-3).
- 6.5.10 Turn the hook assembly over and install the Manual Release Knob (1-1) onto the Actuator Shaft using the two (2) MRK Set Screws (1-2). The Set Screws must bottom out on the notch. Use Anti-Seize on screws.
- 6.5.11 Apply Anti-Seize to the four (4) Side Plate Bolts (2-2) and install. Side Plate Bolts should have a Side Plate Washer (2-2-1) on each side. Place on and torque Side Plate Nuts (2-2-2) to 120 in/lbs.
- 6.5.12 On the Solenoid, ensure that all wires are connected as required and apply shrink tubing over exposed terminal connections.
- 6.5.13 Install the Solenoid Cover (8-5) and Gasket (8-4) into place using the Solenoid Cover Screw (8-2-2) and Cover Screw Washer (8-2-3), as well as the Cover Bolt (8-2-1), and Solenoid Cover Washers (8-2-3).
- 6.5.14 Use two (2) rivets (14-2) to attach the ID Label (14-1) on the MRK Side Plate. The serial numbers should already be stamped on the label.
- 6.5.15 Place Warning Label (600.1313) on the front vertical face of the MRK Side Plate.





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## **7 Assembly Inspection, Testing, and Checkout**

This section provides information and procedures required for operational checkout, testing and troubleshooting.

The following special items are required:

- i. DC Power Supply
  - a. Specification: NFB Filtered DC Power Supply; Range: 0-32 Volts

**NOTE: All test procedures in this section are mandatory. If testing cannot be completed as specified on site, the cargo hook may be sent out to an approved facility for testing.**

### **7.1 Preliminary Inspection**

- 7.1.1 Check that the Keeper is able to rotate in the necessary direction and firmly springs back to the closed position when released.
- 7.1.2 Apply hand pressure to the Load Beam and make sure the hook remains locked. While still pressure is being applied, rotate the Manual Release Knob. The Load Beam should unlock with ease.
- 7.1.3 From an unlocked position, check that the Load Beam is able to automatically return to a fully locked and closed position. If it does not, remove the Clock Spring Cover and adjust the tension of the Clock Spring as necessary.

### **7.2 Electrical and Mechanism Checkout**

- 7.2.1 Using a power supply, check the solenoid operation. Apply 18 volts (minimum) to the solenoid. The solenoid should rotate freely.



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### **7.3 Airworthiness Standard**

- 7.3.1 Gradually apply force until the load reaches 15000 lbs (6804 kg) on the Load Beam.

**\*\*WARNING\*\***

**DO NOT RELEASE THE LOAD AT THIS WEIGHT. SERIOUS DAMAGE COULD BE CAUSED TO PERSONNEL AND/OR EQUIPMENT.**

- 7.3.2 Hold this load for two (2) minutes. Gradually reduce the load to zero.

### **7.4 Cycle Test**

- 7.4.1 Engage a poly-urethane rope or steel cable in the throat of the load beam. The load beam should be free to lock back into the closed position between cycles. Conduct the tests shown in Table 7.1 at the end of this section. All tests must successfully pass.

### **7.5 Vibration Test**

- 7.5.1 After the hook has been cycle tested, apply a load of 6000 lbs (2722 kg). Use a 1 inch shackle connected to the Load Beam to conduct this portion of the test.
- 7.5.2 Using a hammer, strike the shackle with a medium force ten (10) times. The cargo hook should not release the load.



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# of Releases	Load (Lbs)	Release Method	Remarks	Result	Pass/Fail
1	15,000	Static Hold	Hold for two minutes and reduce load to zero	N/A	
10	3,000	Electrical, 25 volts	No 'hang ups' permitted	N/A	
2	6,000	Electrical, 22 volts	Current shall not exceed 14.8A	Amp.	
2	4,500	Electrical, 22 volts	Current shall not exceed 14.8A	Amp.	
2	3,000	Electrical, 22 volts	Current shall not exceed 14.8A	Amp.	
2	1,500	Electrical, 22 volts	Current shall not exceed 14.8A	Amp.	
2	500	Electrical, 22 volts	Current shall not exceed 14.8A	Amp.	
1	6,000	Electrical, 20 volts	Current shall not exceed 14.8A	Amp.	
1	6,000	Electrical, 28 volts	Current shall not exceed 14.8A	Amp.	
1	6,000	Manual		N/A	
1	6,000	Impact Test	Impact Shackle 10 Times, Shall Not Release	N/A	
1	N/A	Solenoid Ohm's	Shall not exceed 1.8 – 2.3 Ohm's	Ohm's	
1	N/A	Electrical Continuity	Across both wires	N/A	

**Table 7.1 - Test Sheet**

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## Appendix I: Complete Assembly Parts List

PART#	NAME	QTY. (Assembly)
C60-1-1	Manual release knob	1
C60-1-2.	Socket set screw	2
C60-2-1.	Side plate	1
C60-2-2.	Side plate bolts	4
C60-2-2-1.	Side plate washers (not shown)	8
C60-2-2-2.	Lock-Nuts (not shown)	4
C60-3-1.	Radial Bearing	2
C60-3-2.	Latch Roller Pin	1
C60-3-2-1.	Roller Pin Retaining Rings (not shown)	2
C60-3-3.	Latch Roller	1
C60-3-4.	Link/latch-lever pin	2
C60-3-4-1.	Link pin retaining rings (not shown)	4
C60-3-5.	Teflon spacer Latch	2
C60-3-6.	Latch	1
C60-3-7.	Link	1
C60-3-8a.	Actuator Shaft Bushing	1
C60-3-8b.	Actuator Shaft Bushing (solenoid side)	1
C60-3-9.	Lever spring	1
C60-3-10.	Latch shaft	1
C60-3-11.	Actuator	1
C60-3-12.	DU Bearing	1
C60-4-1	Trunnion bushing	2
C60-4-2.	Trunnion	1

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PROPRIETARY



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...continued from previous page

C60-4-3.	Load beam – Trunnion pin	1
C60-4-4.	Load beam	1
C60-4-5.	Load beam spacer	1
C60-5-1.	Lever stop bolt	1
C60-5-2.	Lever stop bushing	1
C60-7-1.	Load beam bumper	1
C60-7-2.	Lock Bumper	2
C60-8-1.	Solenoid Nut	2
C60-8-2.	Solenoid	1
C60-8-2-1	Bolt	2
<del>C60-8-2-2</del>	<del>Bolt</del>	1
C60-8-2-3	Washers	3
C60-8-3.	Actuator Pin	1
C60-8-4.	Solenoid cover gasket	1
C60-8-5.	Solenoid cover	1
C60-8-6.	Connector gasket (not shown)	1
C60-8-7.	Connector (not shown)	1
C60-8-7-1.	Connector bolts (not shown)	4
C60-9-1.	Clock spring cover	1
C60-9-1-1.	Spring cover bolts (not shown)	4
C60-9-2.	Clock spring	1
C60-10-1.	Lock spring pin	1
C60-10-2.	Lock spring	1
C60-11-1.	Slide plate solenoid	1
C60-11-2.	Location Pins	2
C60-12-1.	Lock bushing	2

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02/10/11

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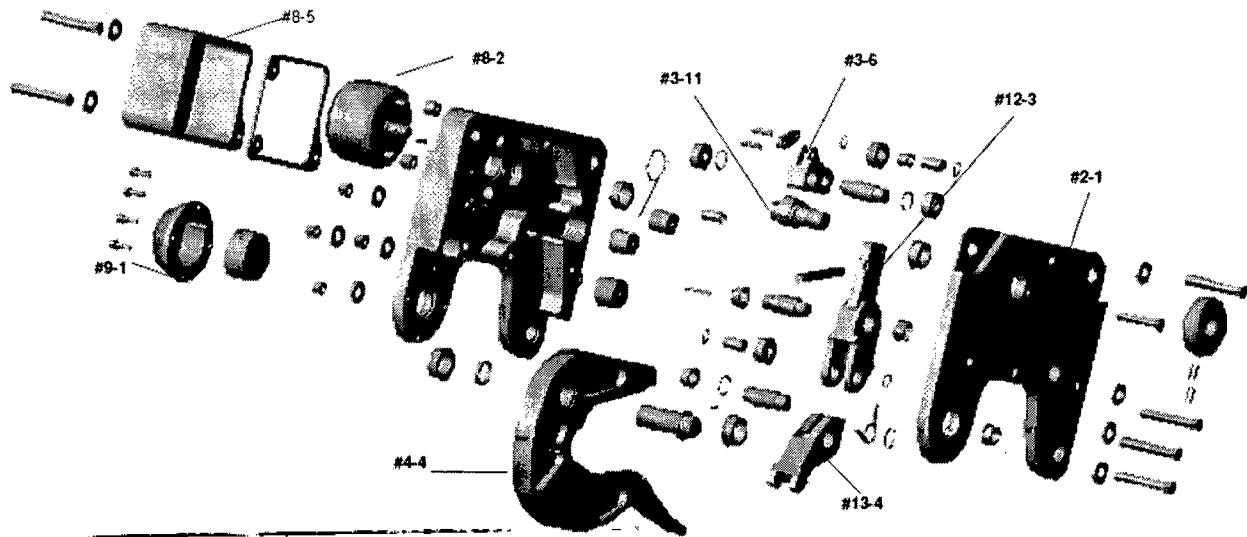
...continued from previous page

C60-12-2.	Lock shaft	1
C60-12-3.	Lock	1
C60-12-4.	Lock roller	1
C60-12-5.	Lock roller pin	1
C60-12-6.	Roller Pin Retaining Rings	2
C60-13-1.	Keeper bushing	2
C60-13-2.	Teflon keeper spacer	2
C60-13-3.	Keeper shaft	1
C60-13-4.	Keeper	1
C60-13-5.	Keeper spring	1
C60-14-1.	Label (not shown)	1
C60-14-2.	Label rivets (not shown)	2
C60-14-3.	Caution Sticker	1
C60-15.	Keeperless Adapter	1

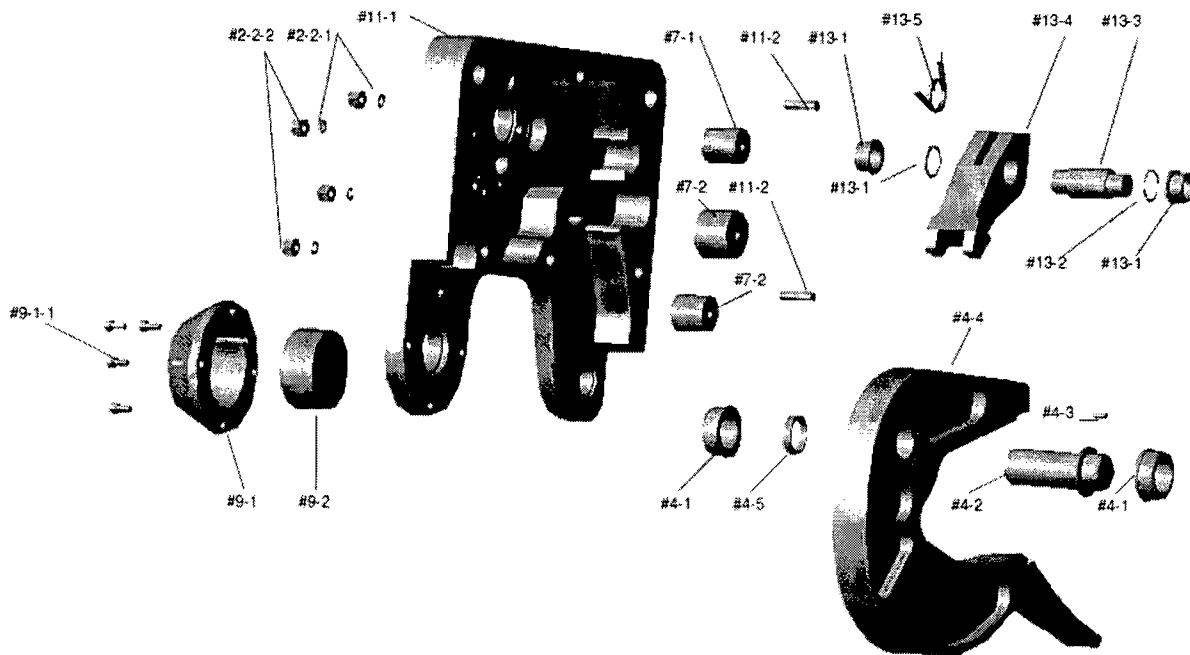
**Table A.1 - Complete Assembly Parts List**

PROPRIETARY

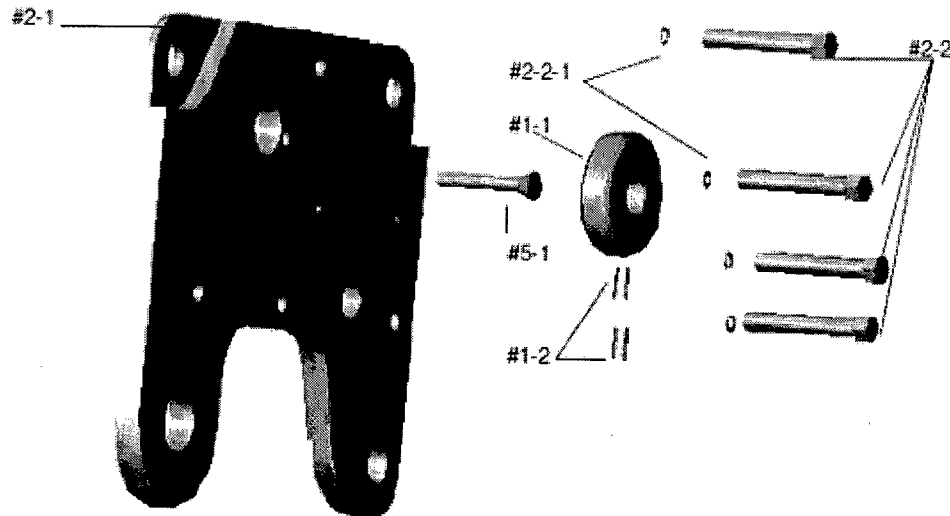
## Appendix II: Assembly Figures



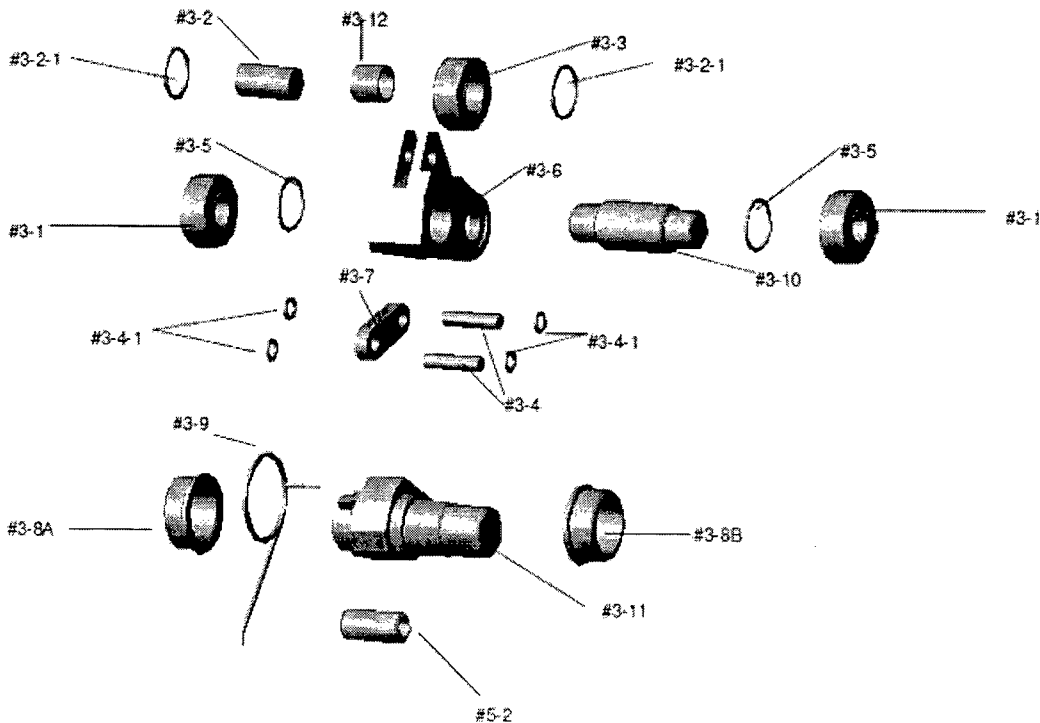
**Figure 1 - Assembly Overview**



**Figure 2 - Side Plate (Solenoid Side)**

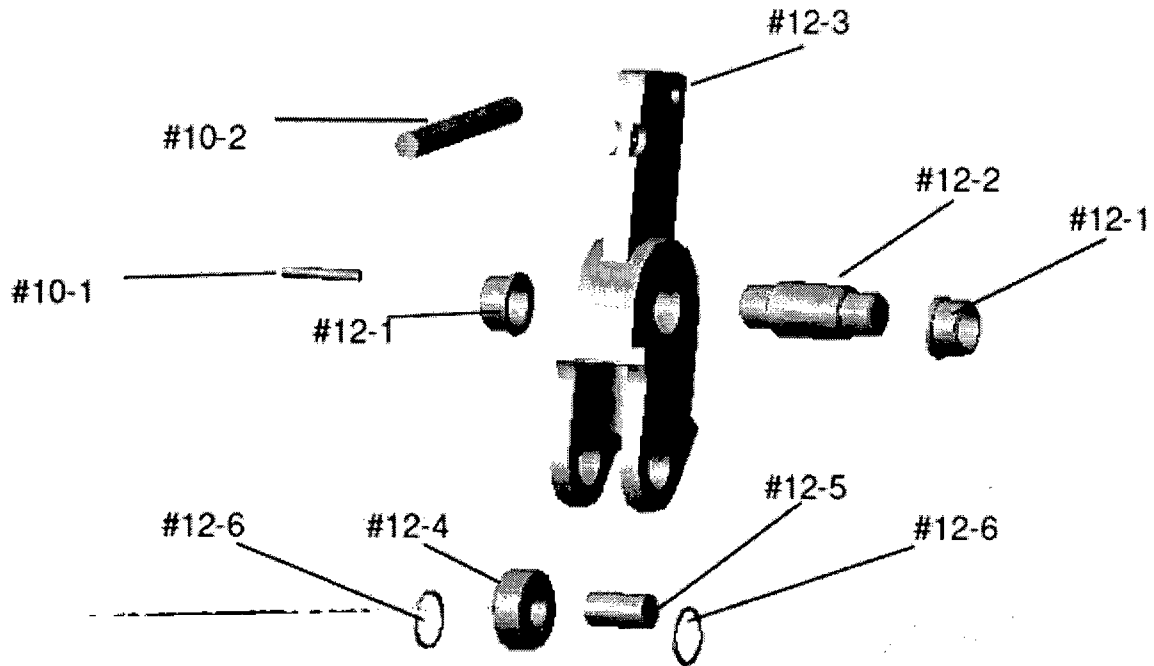


**Figure 3 - Side Plate (MRK Side)**

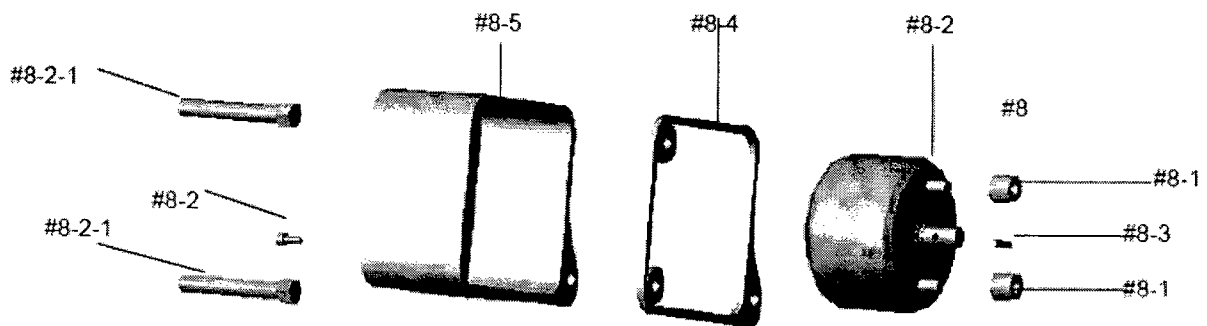


**Figure 4 - Latch & Actuator Shaft Assembly**





**Figure 5 - Lock Assembly**



#8-2-3 washers not shown

**Figure 6 - Solenoid Assembly**



<b>APICAL</b> INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE- NO. 02897				SHEET 1 - OF 1	
	DWG NO. C45-4-4A		REV: NC	PREPARED BY N.CAP	DATE: 06/28/10	EFFECT ON DWG <input type="checkbox"/> INC. <input checked="" type="checkbox"/> UNINC.
	DWG TITLE: LOAD BEAM ASSY					
	APPROVED BY:	ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: CURRENT ORDER AND STOCK	
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE	REASON: CHANGED DIMENSIONS OF PART C45-4-3 PIN FROM 0.125x0.625 TO 0.125x0.875 (AS PER ECR 10-25)					

3	R	C45-4-3	1		PIN	90145A474	$\triangle 1$ $\triangle 4$
F/N	TC	PART NUMBER	C45-4-4A	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:						CHANGE CATEGORY	DER REVIEW REQUIRED
<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRU <input type="checkbox"/> ICA <input checked="" type="checkbox"/> BOM						<input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

<b>APICAL</b> INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE NO. 02702				SHEET 1 OF 1	
	DWG NO. C45_4_4A	REV: N/C	PREPARED BY D.BARKER	DATE: 11/30/09	EFFECT ON DWG <input type="checkbox"/> INC. <input checked="" type="checkbox"/> UNINC.	
	DWG TITLE: C45 LOAD BEAM ASSY					
	APPROVED BY:	ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: CURRENT ORDER	
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE	REASON: REVISED FONT SIZE IN NOTE 3 PER ECR 09-105					

**SHEET 1, ZONE A1, NOTE 3 IS:**

△ IDENTIFY IAW MPP-120. LASER ENGRAVE CENTURY GOTHIC, 12 POINT ASSEMBLY PART NUMBER AND REVISION.

F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:				<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRUC <input type="checkbox"/> ICA <input type="checkbox"/> BOM	CHANGE CATEGORY <input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	DER REVIEW REQUIRED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

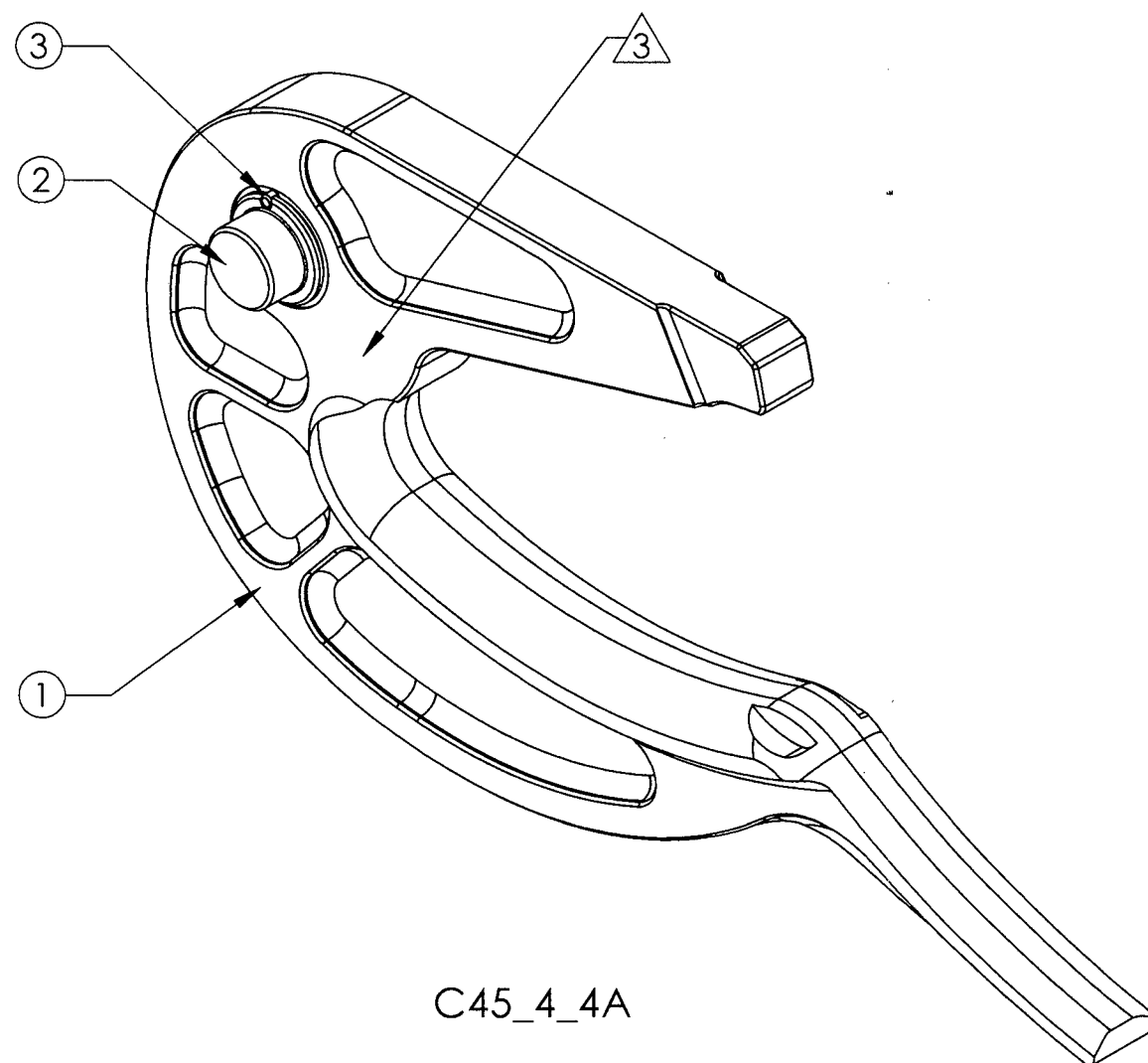
1 2 3 4 5 6 7 8

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	LAST PROTOTYPE REVISION: NONE		N/C
N/C	INITIAL RELEASE	11/17/09	P. BRAVO

**NOTES:**

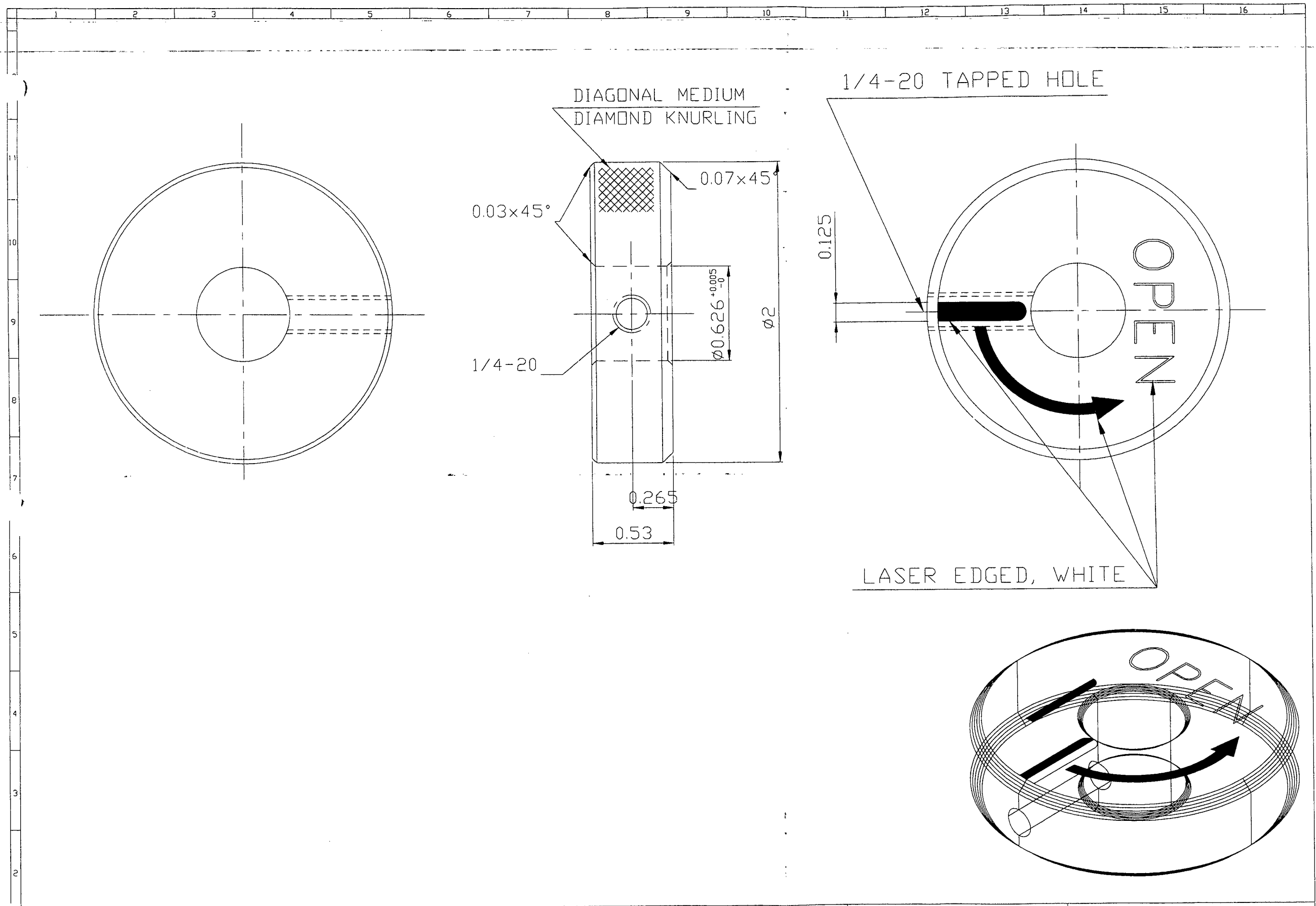
- 1 PRESS FIT F/N 2 INTO F/N 1 PRIOR TO PLATING. MATCH DRILL .125" DIAMETER HOLE INTO TRUNION, F/N 2, THROUGH LOAD BEAM, F/N 1, AND INSTALL PIN, F/N 3.
- 2 FINISH: NICKEL PLATE IAW MIL-C-26074 CLASS 2, GRADE B, .001" THICKNESS
- 3 IDENTIFY IAW MPP-120. LASER ENGRAVE CENTURY GOTHIC, 9 POINT ASSEMBLY PART NUMBER AND REVSION.
- 4 VENDOR: McMASTER CARR



**UNINCORPORATED ECN(s)**

02702, 02897,

	1	3	C45_4_3	PIN	90145A472	1	4
	1	2	C45_4_2	TRUNNION C45-HOOK			
	1	1	C45_4_4	LOAD BEAM C45-HOOK			
			C45_4_4A	C45 LOAD BEAM ASSY			1
	C45_4_4A	FIND NO.	PART No.	DESCRIPTION	MAT'L	SPEC	
QTY				PARTS LIST			
NEXT ASSY (S)				ORIGINAL DATE (MO-DA-YR)	11/17/09	<b>APICAL INDUSTRIES</b> 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
				DRAWN BY	D.BARKER		
				CHECKER	S.MONTGOMERY		
				DRAWING APPROVAL	P. BRAVO 11/17/09		
				CONTRACT No.		<b>C45 LOAD BEAM ASSY</b>	
				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°			
	SIZE	B	CAGE CODE	07MZ6	DWG. NO.	C45_4_4A	REV. N/C
				SCALE	NONE	SHEET 1 OF 1	



REVISION			TOLERANCES			IMPORTANT			CANAM			MANUAL RELEASE KNOB		
07/01/98			Fraction			DESIGNED: CANAM			SCALE: 1:1			QUANTITY: 1		
B LASER EDGING & KNURLING STYLE Feb.17.03. CAN			.x +/- .015			DRAWN: ZOLTAN BANYI			DATE: 14/05/97			PART No. C45_1-1		
C			.xx +/- .010			CHECKED BY:			DISK No:			DRAWING No. C45_1-1		
D			.xxx +/- .005			APPROVED BY:			PROJECT No: 14/05/97			REV. 2		
E			Holes ± 0.010 / 0.000			MATERIAL: 6061-T6			FINISH: Anodize red					

NOTE: All dimensions are in inch unless specified. Break all sharp edges.

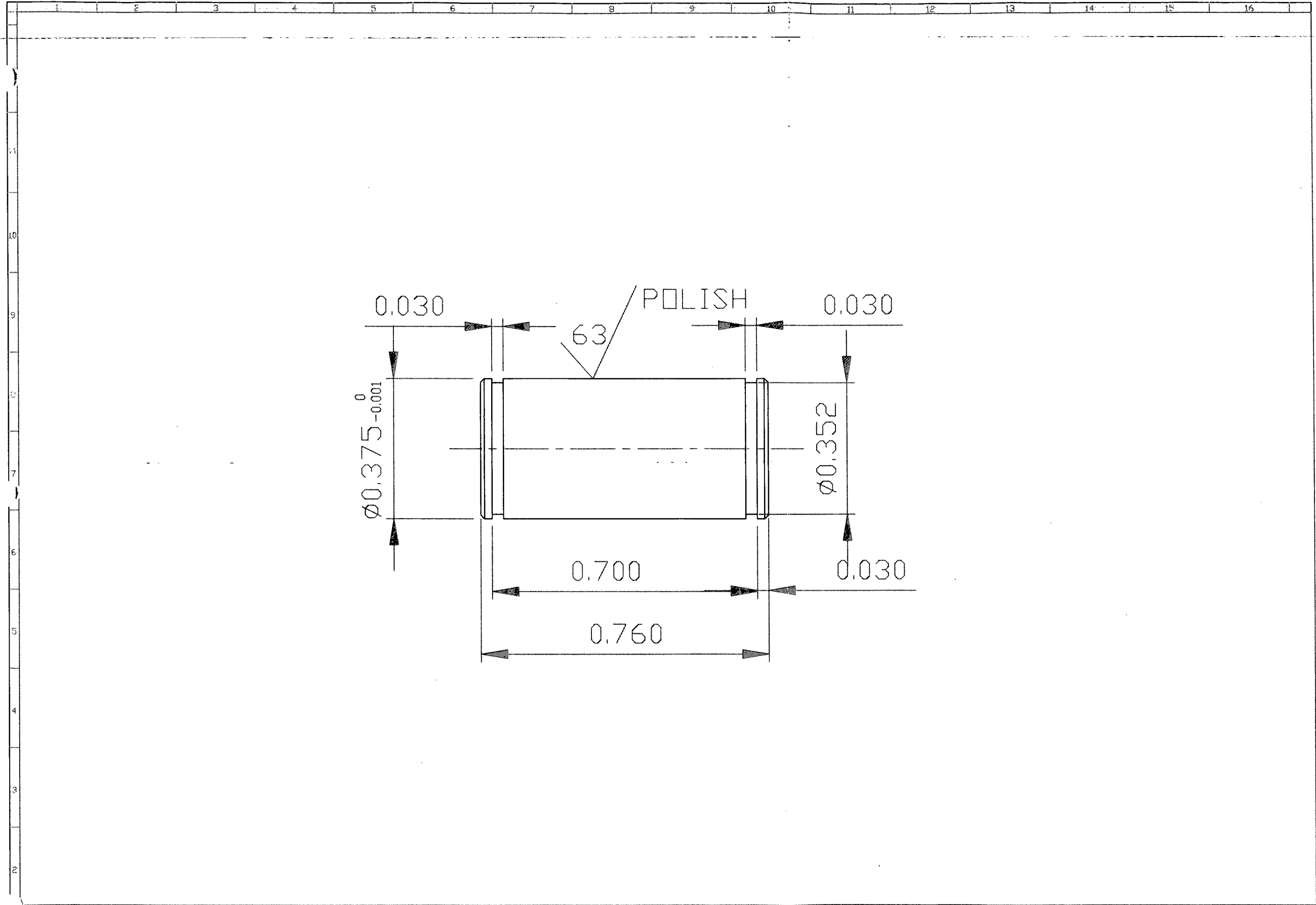
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DER REVIEW REQUIRED  
☐ YES ☒ NO

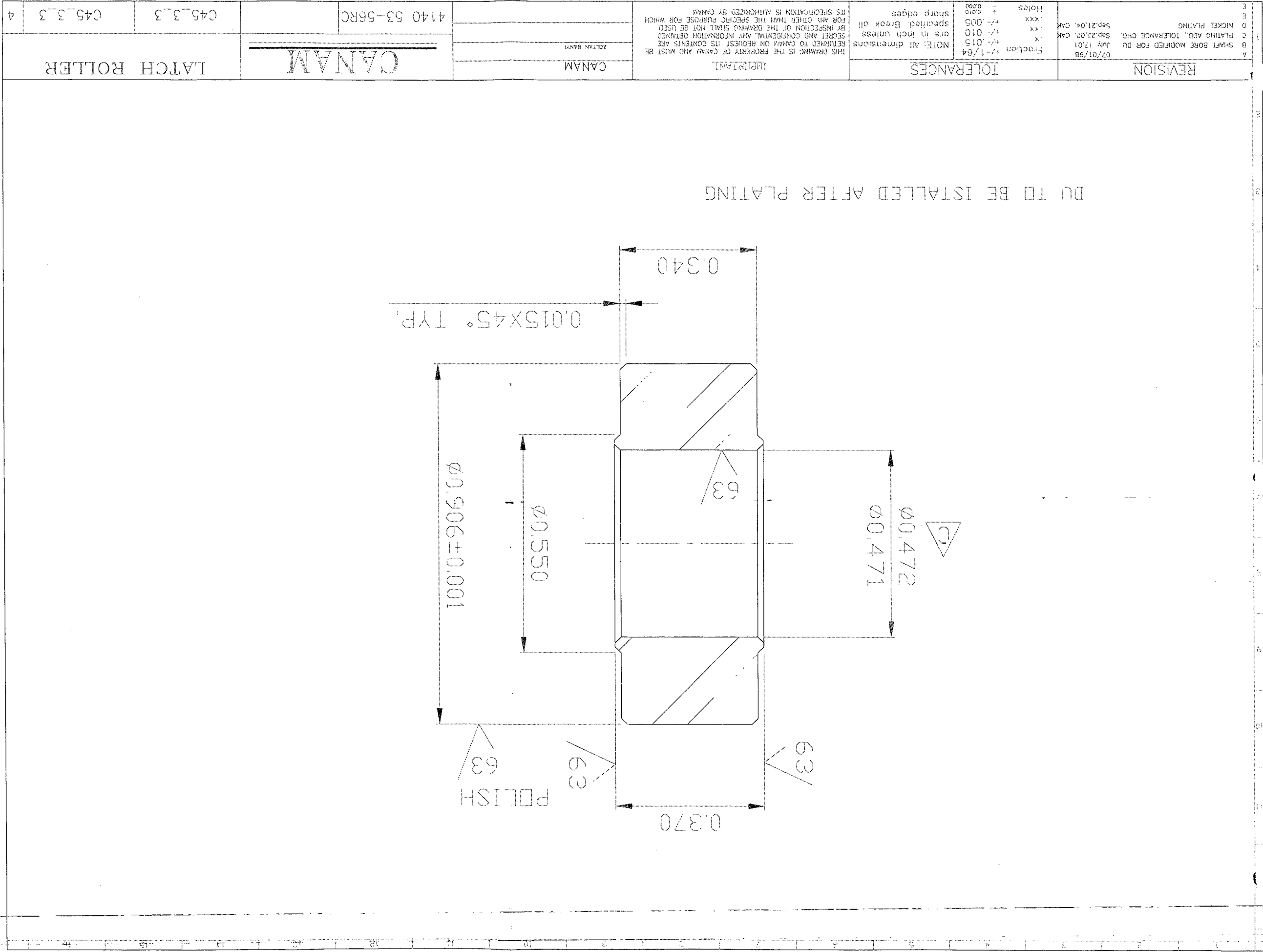
DER REVIEW REQUIRED  
☐ YES ☒ NO

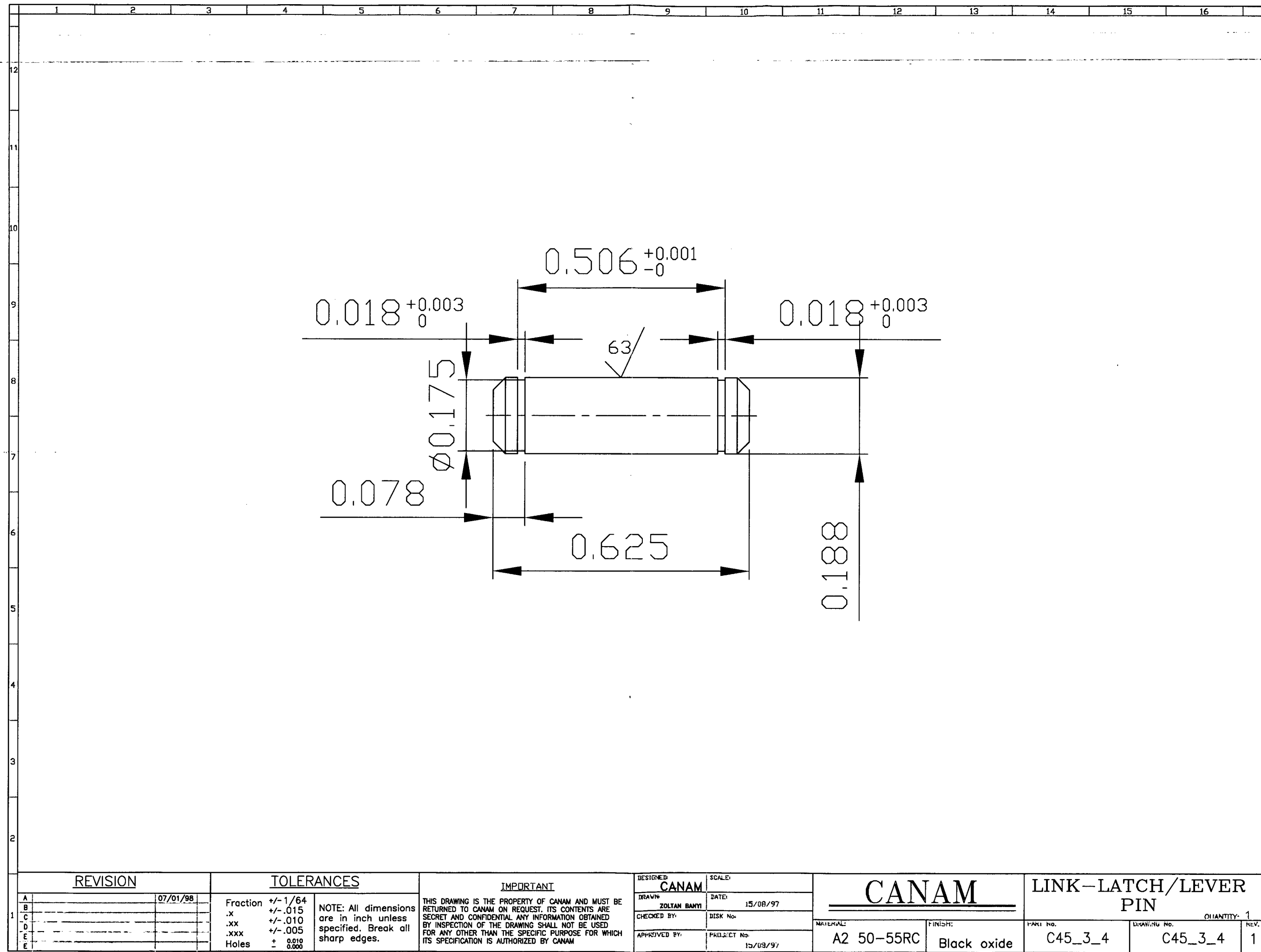




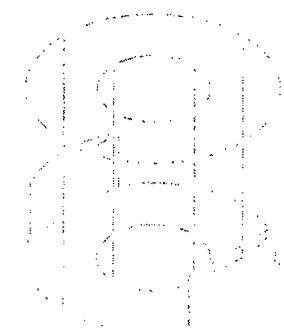
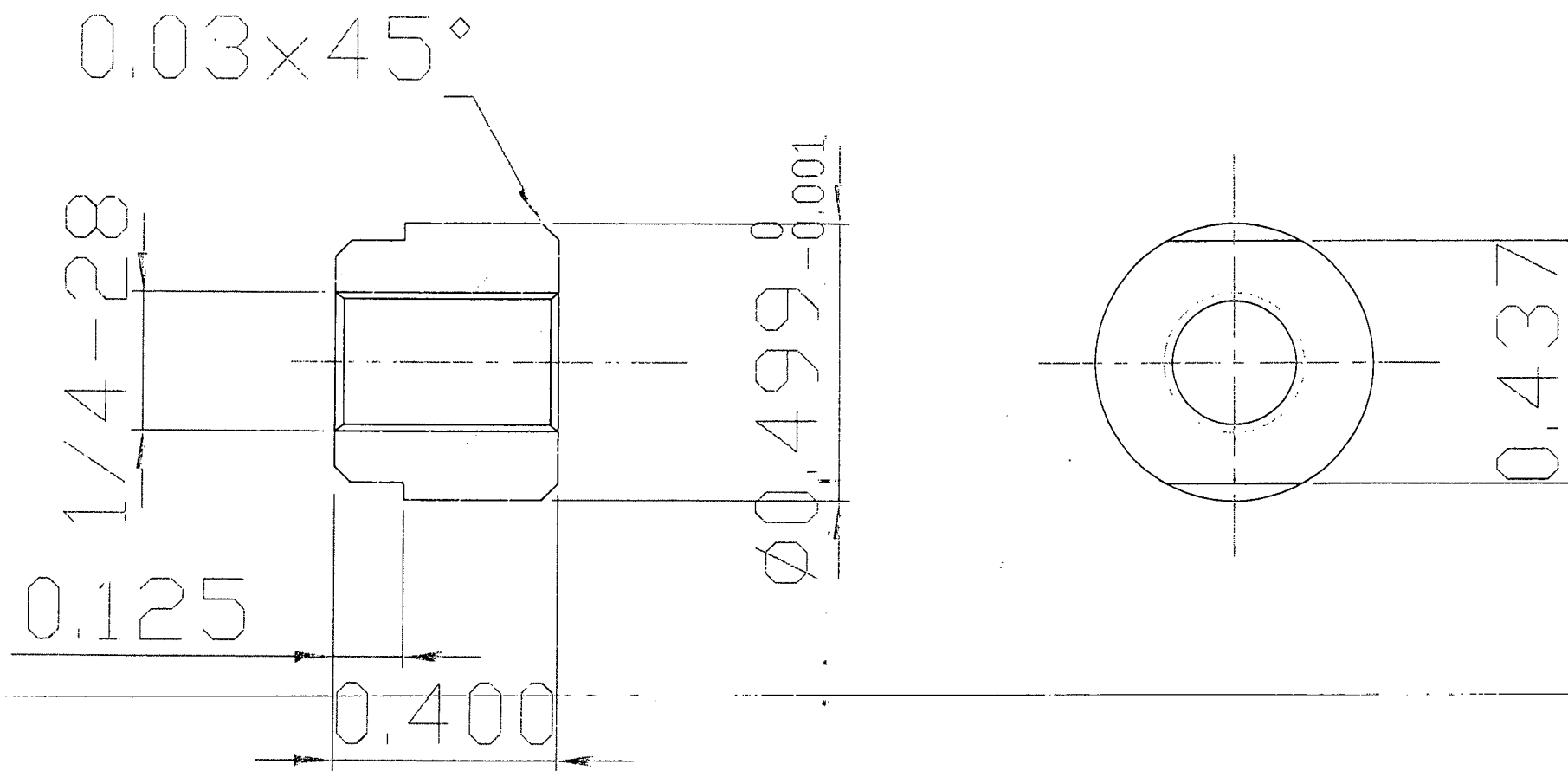


REVISION		TOLERANCES		IMPORTANT	CANAM		CANAM		LATCH ROLLER PIN				
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B		.x	+/- .015			ZOLTAN BANYI							
C		.xx	+/- .010										
D		.xxx	+/- .005										
E		Holes	+ 0.010 - 0.000										

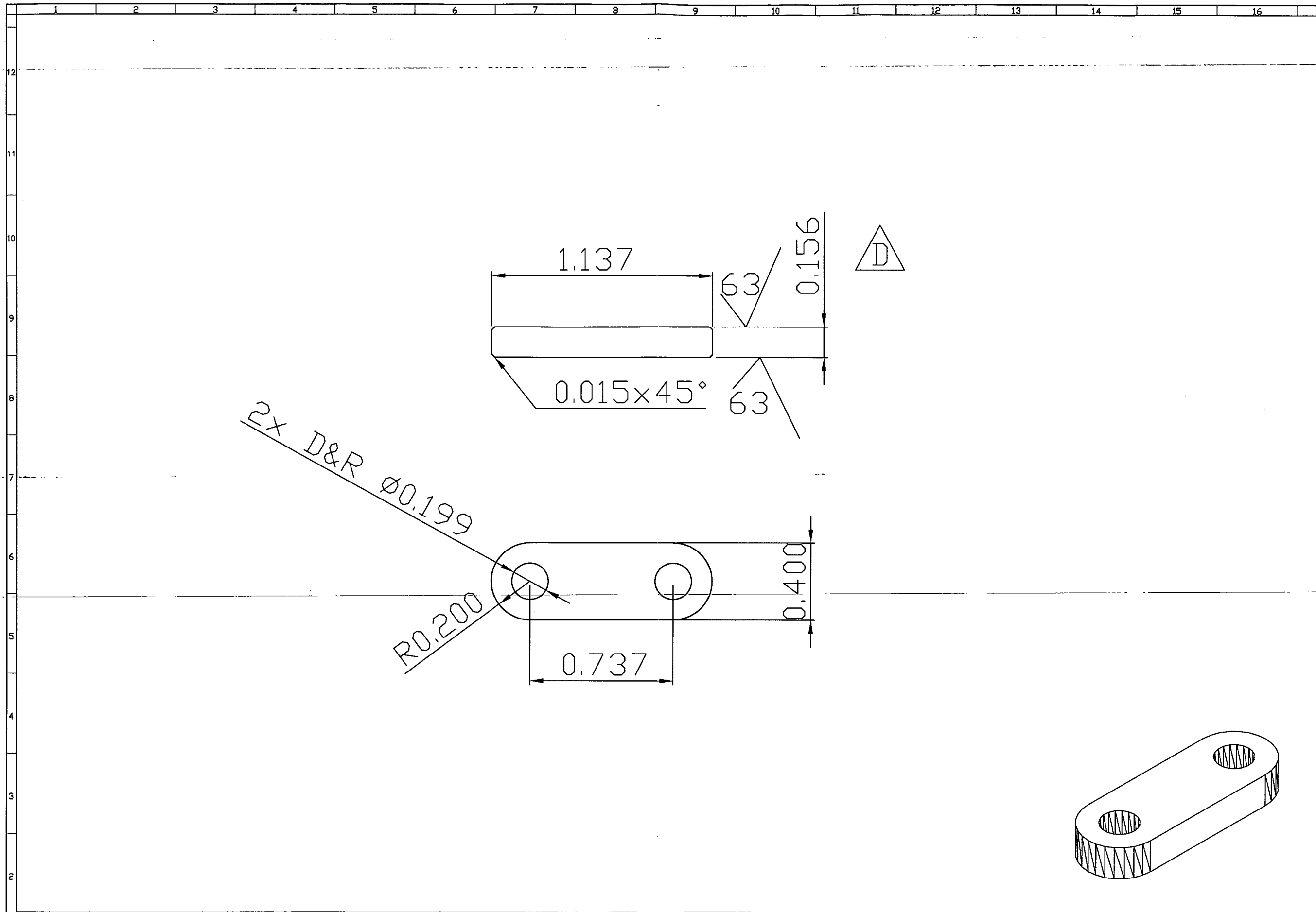




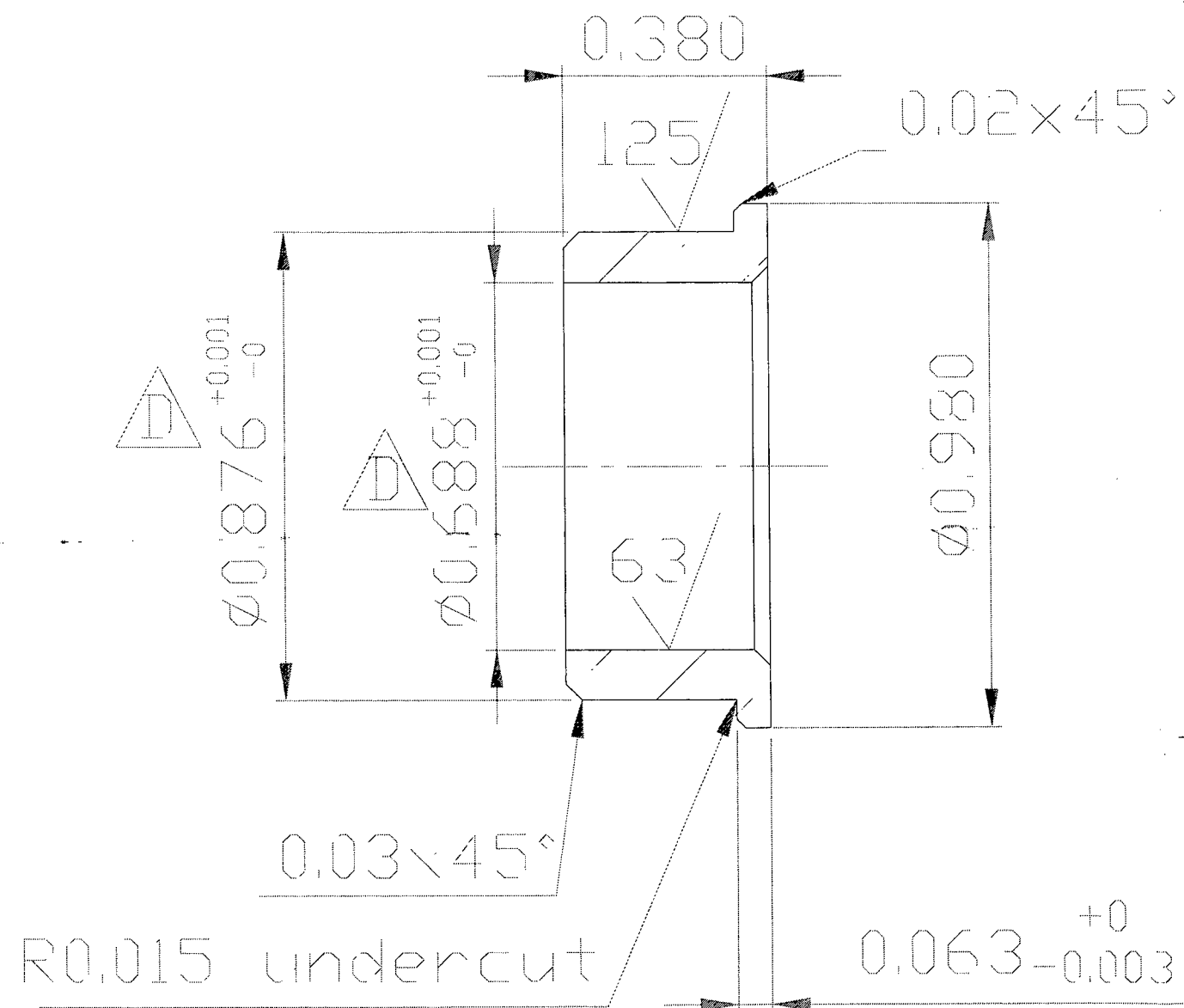
REVISION				TOLERANCES				IMPORTANT				DESIGNED: CANAM		SCALE: 1:1		CANAM				LATCH			
A	deeper slot	21/09/00		Fraction	+/- 1/64	NOTE: All dimensions are in inch unless specified. Break all sharp edges.	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM	DRAWN: ZOLTAN BANYI	DATE: 14/05/97	CHECKED BY:	DISK No:	APPROVED BY:	PROJECT No: 04/05/97	MATERIAL: SS 17-4	FINISH:	PART No. C45_3_6	DRAWING No. C45_3_6	QUANTITY:					
B	DEEPER COUNTERBORE	Aug.17.01	CAK	.x	+/- .015																		
C	BATCH #. ALL DIA.'S CHANGED	Oct.16.01	CAK	.xx	+/- .010																		
D	MATERIAL CHANGED TO SS 17-4	Mor.20.02	CAK	.xxx	+/- .005																		
E	WIDTH CHANGED	Jun.10.02	CAK	Holes	+ .0010 - .0000																		
E	RADIUS ADDED	Sep.21.04	CAK																				



REVISION				TOLERANCES		CANAM	ZOLTAL: BAW	CANAM		SOLENOID NUT QUICK CHANGE		
A	NOTE ADDED	Oct.07.05	VH	Fraction	+/- 1/64			THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	1018		C45_8_1_1	C45_8_1_1 : 2
B				.x	+/- .015							
C				.xx	+/- .010							
D				.xxx	+/- .005							
E				Holes	+/- .010 +/- .005							
F												



REVISION			TOLERANCES			IMPORTANT			DESIGNED BY CANAM		SCALE		CANAM		LINK	
A		07/01/98	Fraction	+/- 1/64		NOTE: All dimensions are in inch unless specified. Break all sharp edges. THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM			DRAWN	CANAM	DATE	15/08/97				
B		26/01/99	.x	+/- .015					CHECKED BY	ZOLTAN BANYI	DATE	15/08/97				
C	PLATING CHANGE	Sep.23.02	.xx	+/- .010												
D	THICKNESS CHANGE	Jan.21.03	.xxx	+/- .005												
E			Holes	± 0.010 0.000												
													01 50-55RC		Nickel Plated	
													C45_3_7		C45_3_7	
															QUANTITY: 1	
															REV. 4	



REVISION		TOLERANCES		IMPORTANT	CANAM		ACTUATOR SHAFT BUSHING		
A	07/01/98	Fraction	$\pm 1/64$		CANAM				
B	QUANTITY CHANGED, OD FINISH	XX	$\pm 0.015$	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM	ZOLTAN BANYI				
C	OD & ID CHANGED	XX	$\pm 0.010$						
D	OD & ID CHANGED	XXX	$\pm 0.005$						
E	DRAWING NAME CHANGED								
F	Changed dimen. 0.068 to 0.063	Holes	$\pm 0.010$						
	May 02.07 AE		$\pm 0.000$						

CANAM

AL-BRONZE

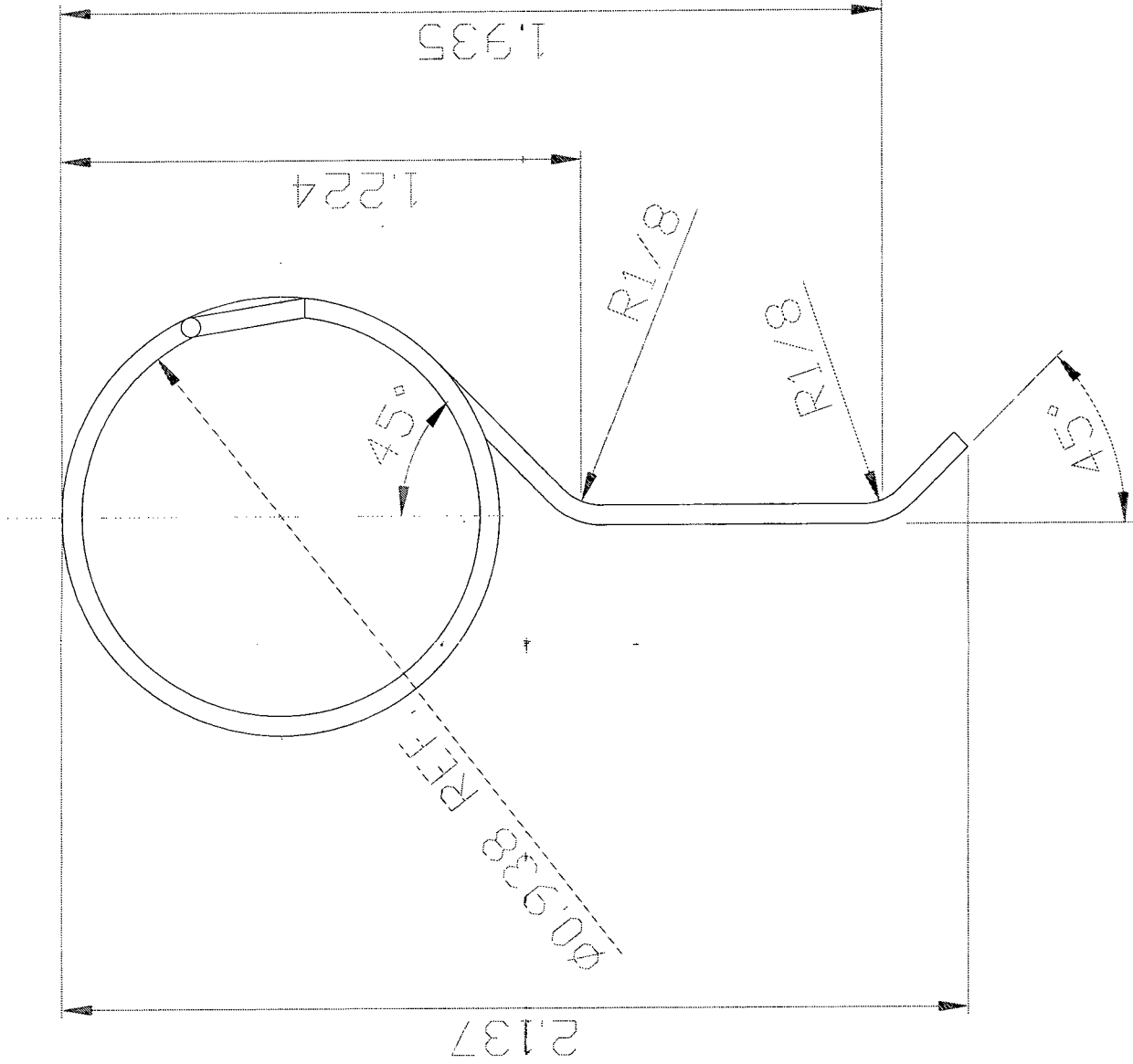
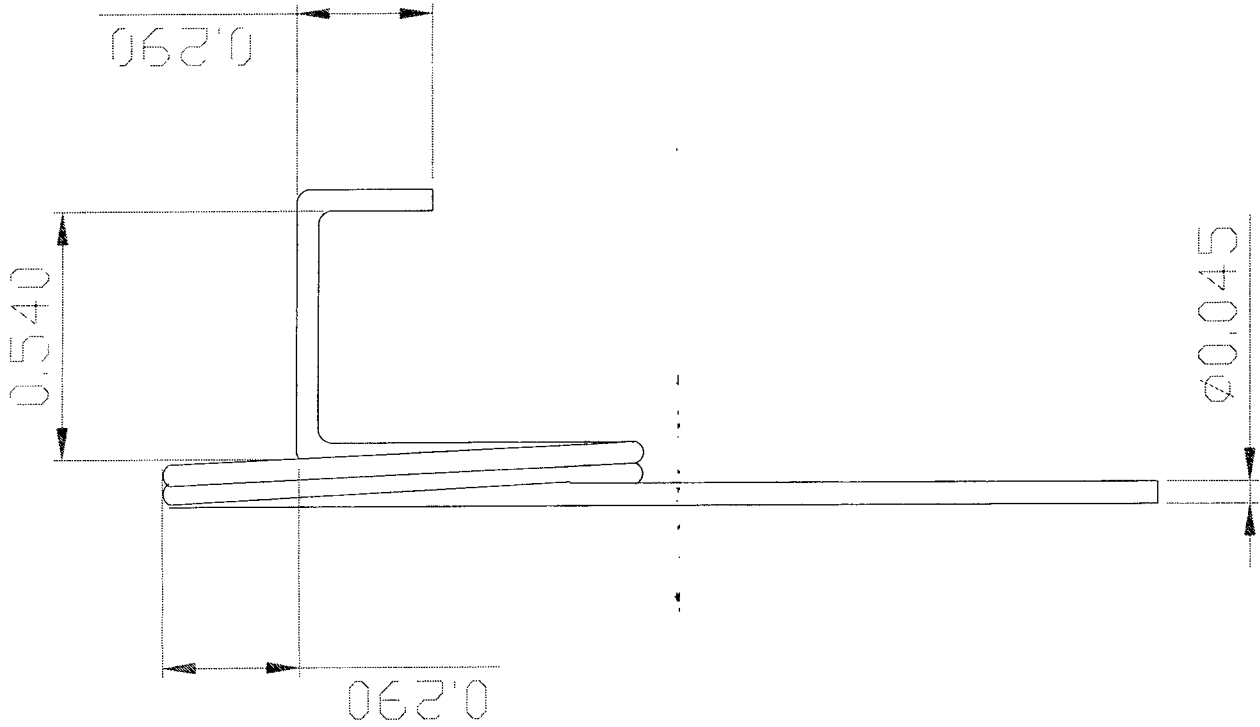
C45\_3\_8a

C45\_3\_8a

6







REVISION	
A	SPRING END STRAIGHT
B	SHAPE & DIMENSIONS CHANGED
C	
D	
E	

Aug. 17, 01

Sep. 14, 01

TOLERANCES	
Fraction	$\pm 1/64$
.X	$\pm .015$
.XX	$\pm .010$
.XXX	$\pm .005$
Holes	$\pm .006$

NOTE: All dimensions are in inch unless specified. Break all sharp edges.

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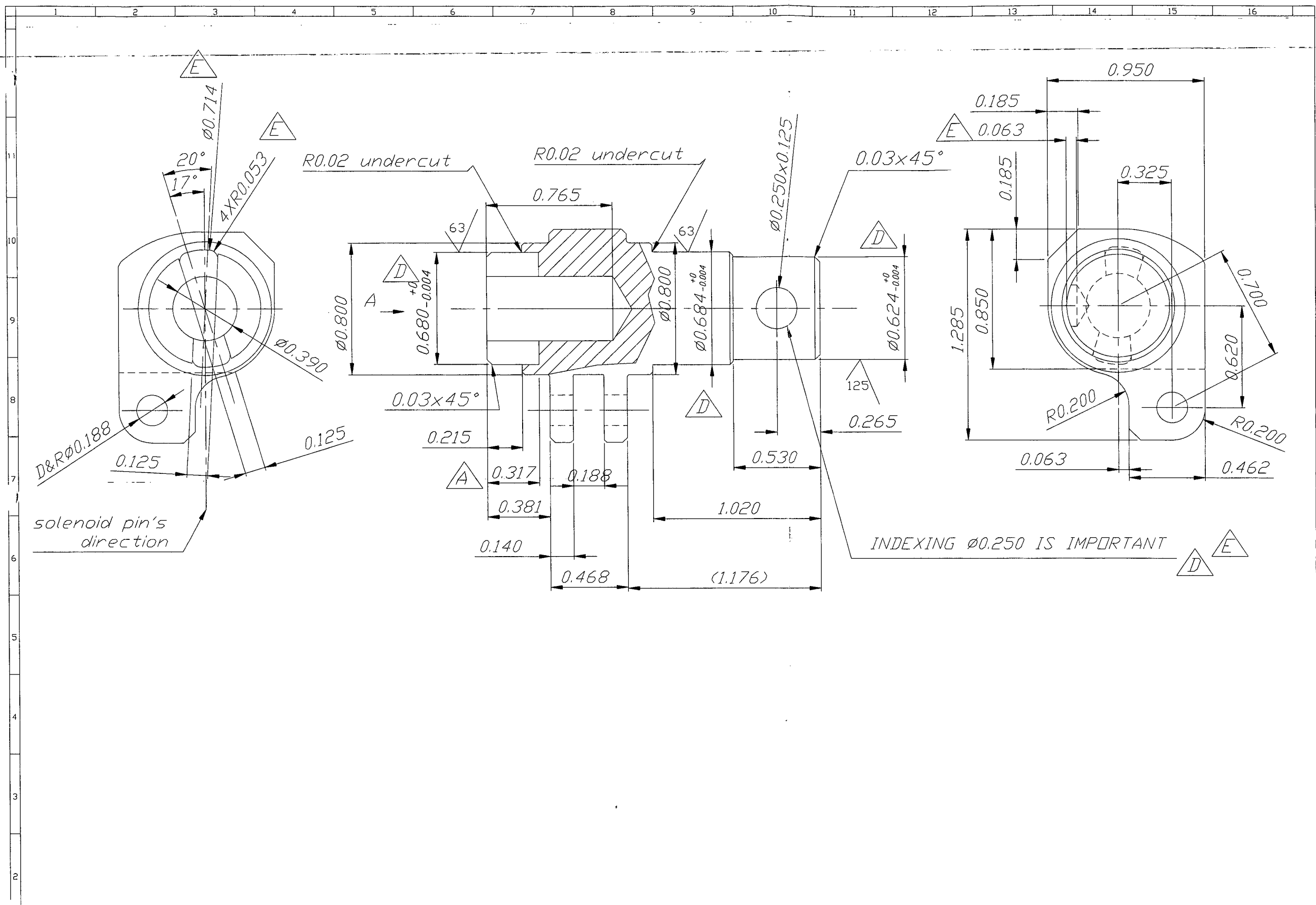
CANAM	
ZELIAN BANYI	

CANAM	
303	

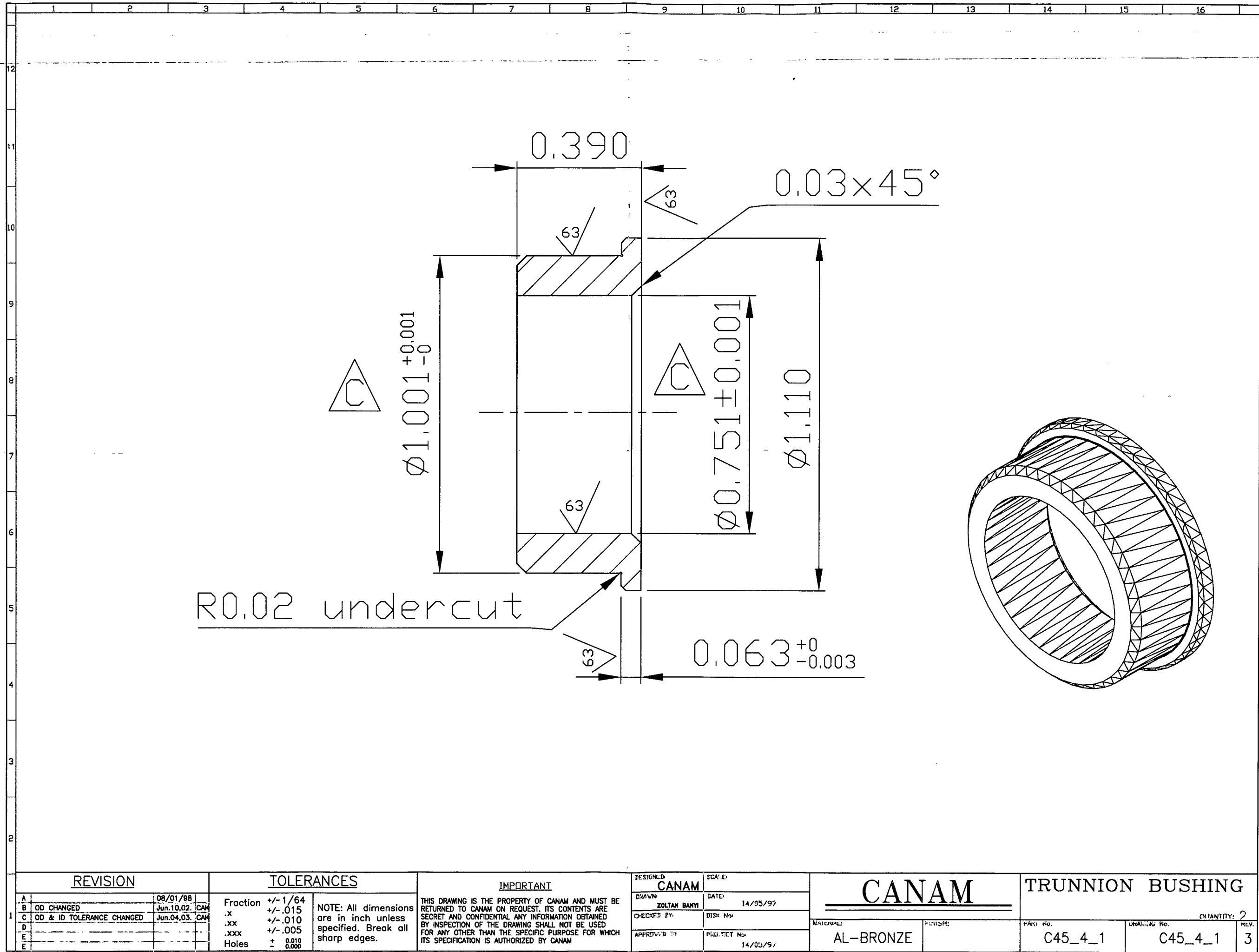
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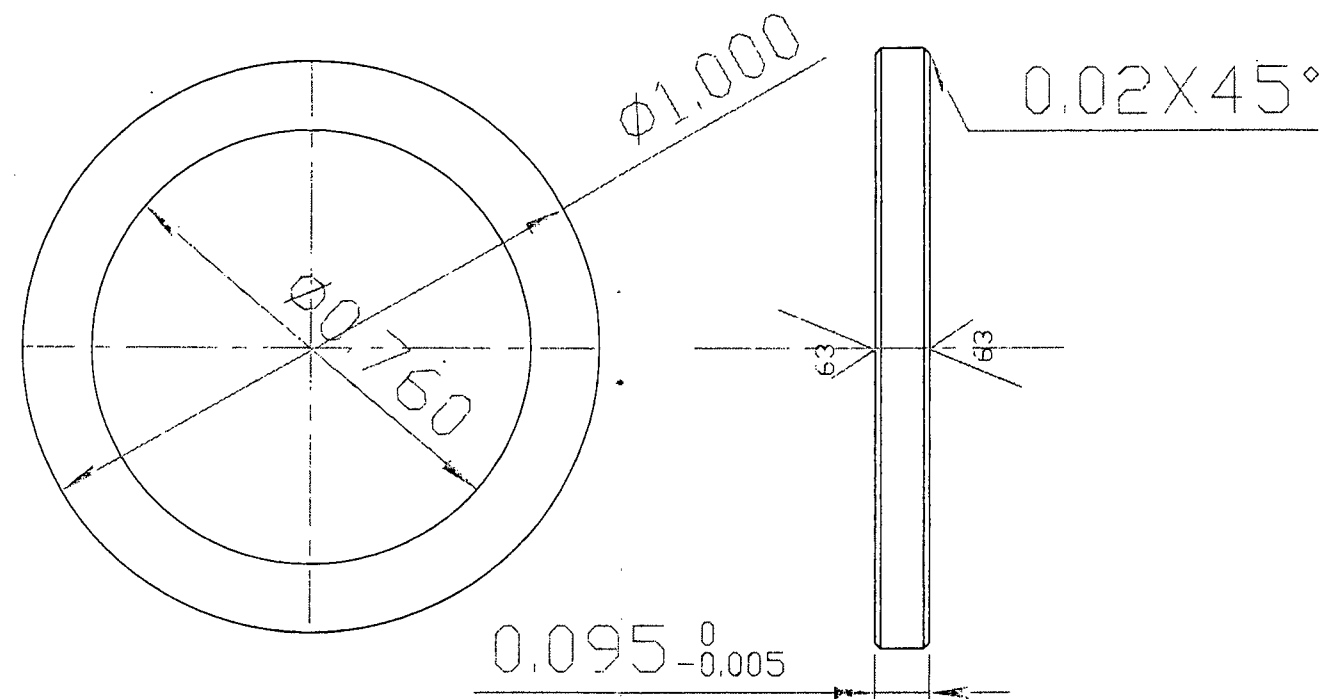
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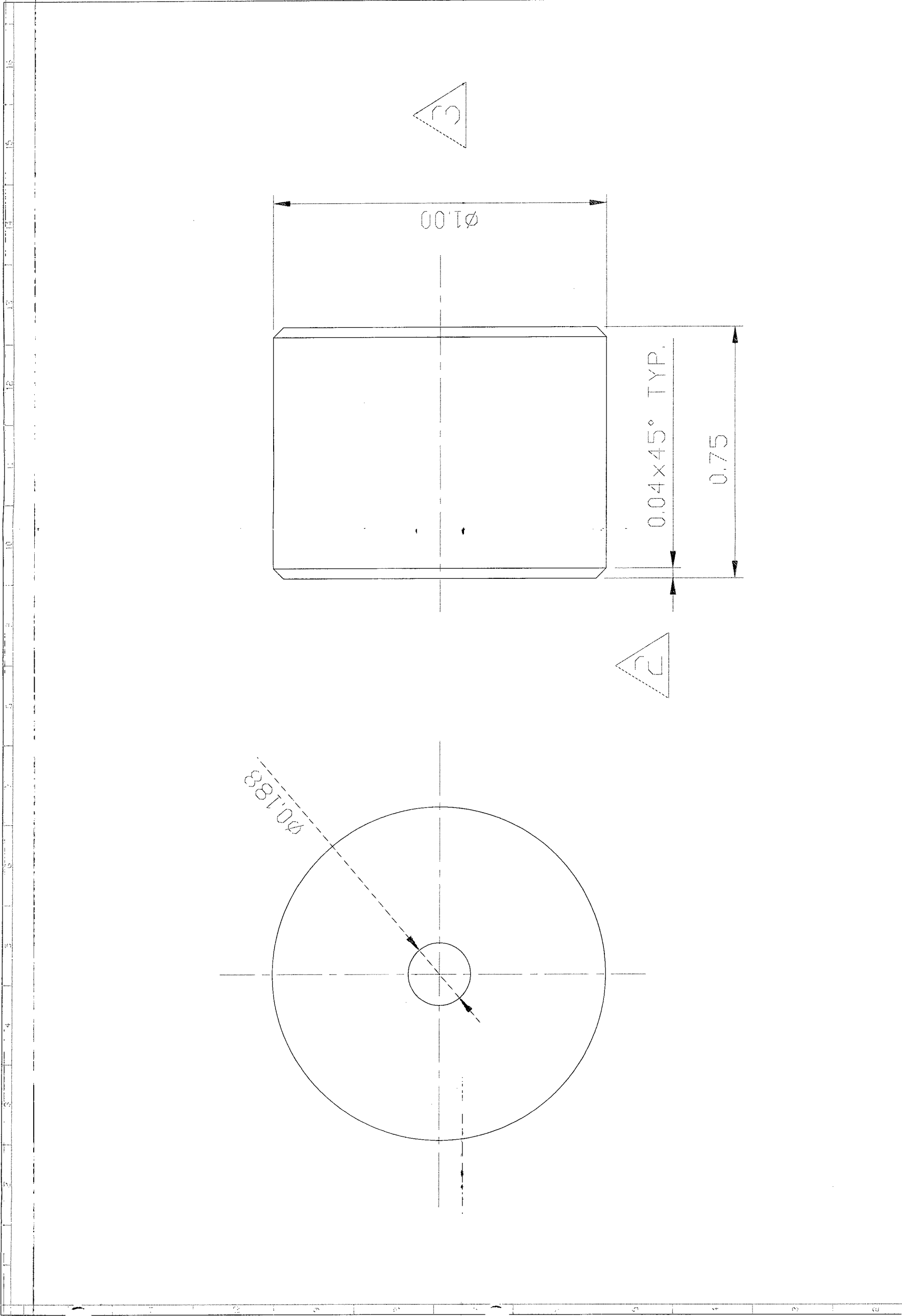


REVISION				TOLERANCES				IMPORTANT				DESIGNED: CANAM		SCALE:		CANAM		ACTUATOR					
A	deeper slot	15/08/00		Fraction	+/- 1/64	NOTE: All dimensions are in inch unless specified. Break all sharp edges.	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM	DRAWN: ZOLTAN BANYI		DATE: 28/01/98		MATERIAL: SS 17-4		FINISH:		PART No. C45_3_11		DRAWING No. C45_3_11		QUANTITY: 1		REV. 6	
B	ø1/4" HOLE ADDED	Aug.17.01	CAK	.x	+/- .015			CHECKED BY:		DISK No:													
C	MATERIAL CHANGED TO SS 17-4	Mar.20.02	CAK	.xx	+/- .010			APPROVED BY:		PROJECT No: 28/01/98													
D	TOLERANCE CHANGE, ADDED NOTE	Sep.10.02	CAK	.xxx	+/- .005			MATERIAL:		FINISH:													
E	DEPTH OF HOLE, GROOVE CONF.	Feb.07.03	CAK					PART No:		DRAWING No:													
E	Changed dimen. 0.684 to 0.680	May 02.07	AE	Holes	+ 0.010 - 0.000																		

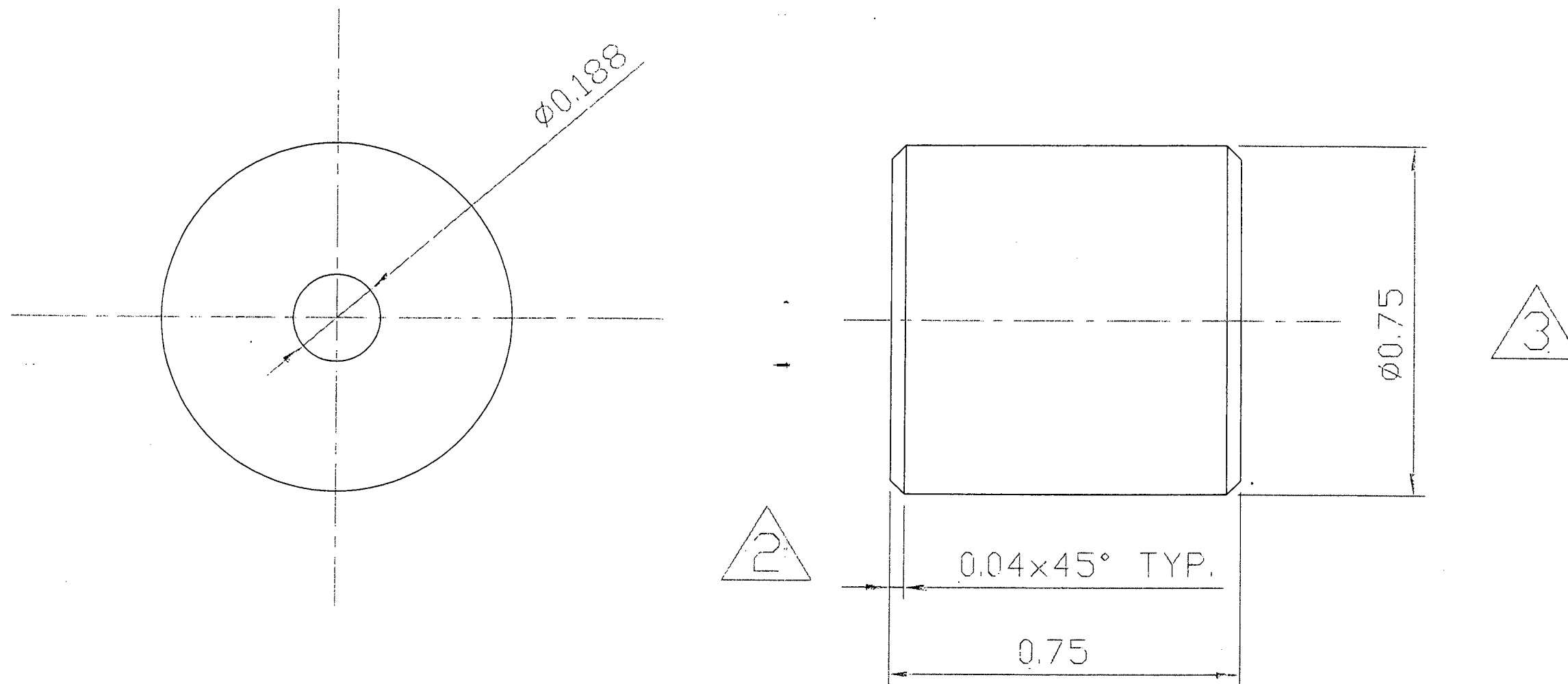




REVISION		TOLERANCES		CANAM	CANAM		LOAD BEAM SPACER		
A	08/01/97	Fraction	+/- 1/64		ZOLTAR BANYI		4140 HT	C45_4_5	C45_4_5 1
B		.x	+/- .015						
C		.xx	+/- .010						
D		.xxx	+/- .005						
E		Holes	+ .001 - .002	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.					

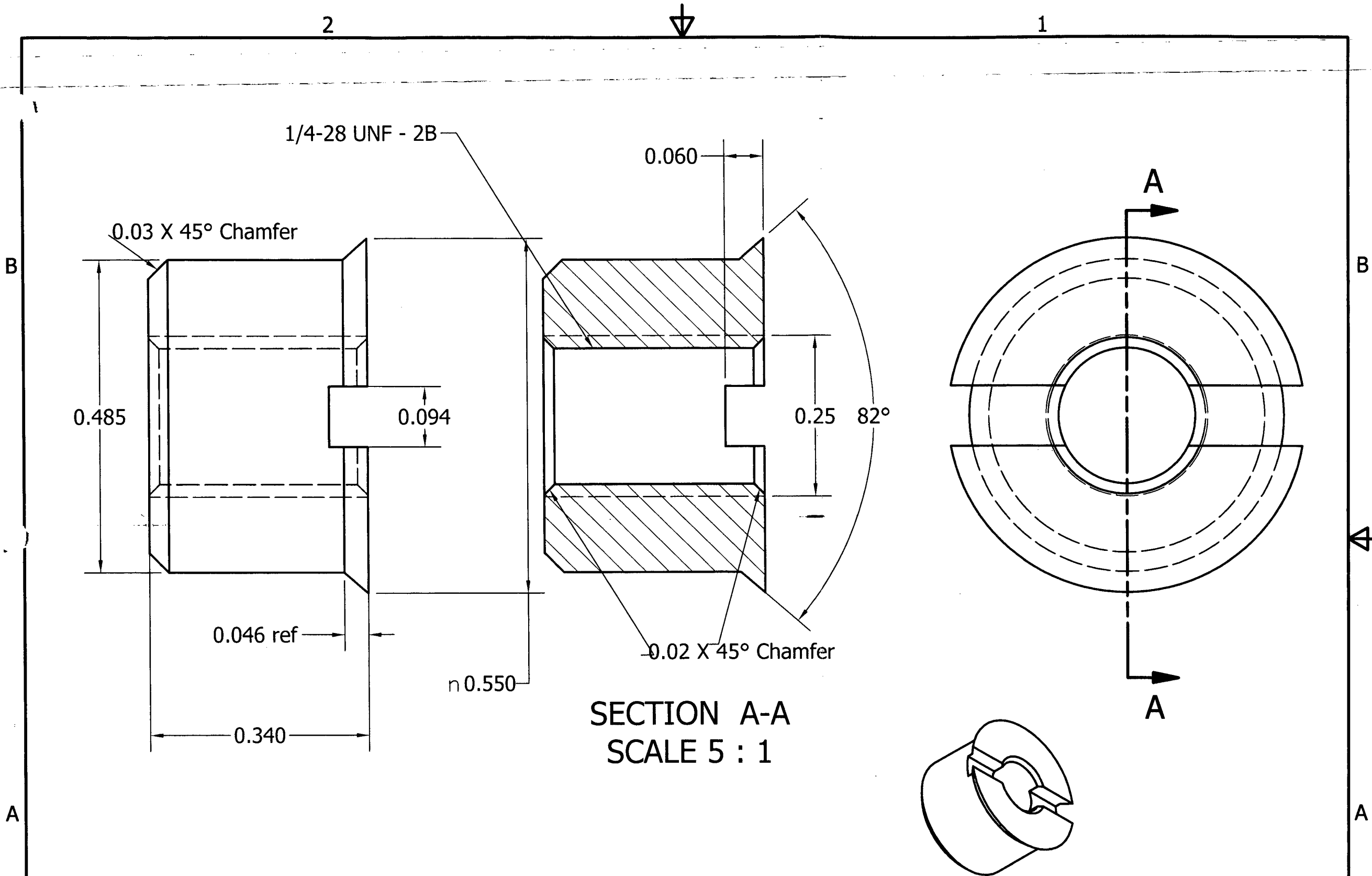


REVISION		TOLERANCES		IMPORTANT THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	CANAM		LOAD BEAM BUMPER	
A	CHAMFER ADDED	08/21/98	CMH		CANAM			
B	OD. ADDED	Sep.21.04	CMH		ZULIAN BANYI			
C	DRAWING NAME CHANGED	Nov.17.04	CMH					
D	DRAWING NAME CHANGED	Oct.07.05	VH					
E	FIXED DIMENSION	Oct.17.06	VH				C45_7_1	5



REVISION			TOLERANCES			THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	CANAM		CANAM		LOCK BUMPER			
A		08/01/98	Fraction	+/- 1/64	NOTE: All dimensions are in inch unless specified. Break all sharp edges.		ZOLTAN BANYI							
B	CHAMFER ADDED	Sep.21.04. CAH	.X	+/- .015										
C	OD. ADDED	Nov.17.04. CAH	.XX	+/- .010										
D	DRAWING NAME CHANGED	Oct.07.05. VH	.XXX	+/- .005										
E	FIXED DIMENSION	Oct.17.06. VH	Holes	+ 0.010 - 0.005				Polyurethane				C45_7_2	C45_7_2	5





SECTION A-A  
SCALE 5 : 1

REVISION				TOLERANCES		<div>This drawing is the property of CANAM and must be returned to CANAM upon request. Its contents are secret and confidential. Any information obtained by inspection of the drawing shall not be used for any other than the specific purpose for which its specification is authorised by CANAM.</div>	DESIGNED: Alex Eroujenets		SCALE: 5:1		Canam Aerospace Inc.		Solenoid Nut		QTY: 2
A	Changed groove to .0938	Jul26,07	AE	Fraction +/- 1/32	NOTE:  All dimensions are in inch unless specified.		DRAWN: Alex Eroujenets		DATE: 26/07/2007		PART No.  C45-8-1-2	MATERIAL:  T-304 SS	HEAT TREATMENT:	SURFACE PROTECTION:	REV. 3
B				x +/- .020			CHECKED BY: Alex Eroujenets		PROJECT NAME: C45						
C				xx +/- .010			APPROVED BY: Canam Aerospace		CAD FILE: 5-8-1-2-R4(SolenoidNut).ldw						
D				xxx +/- .005											
E				Holes + 0.010											

2

1

APICAL  
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 02618

SHEET 1 OF 1

DWG NO. C45\_8\_2

REV: B

PREPARED  
BY A.QUAN

DATE: 09/17/09

EFFECT ON DWG.  
☐ INC. ☒ UNINC.

DWG TITLE: SOLENOID

APPROVED BY: ENGR *[Signature]*

MFG *[Signature]*

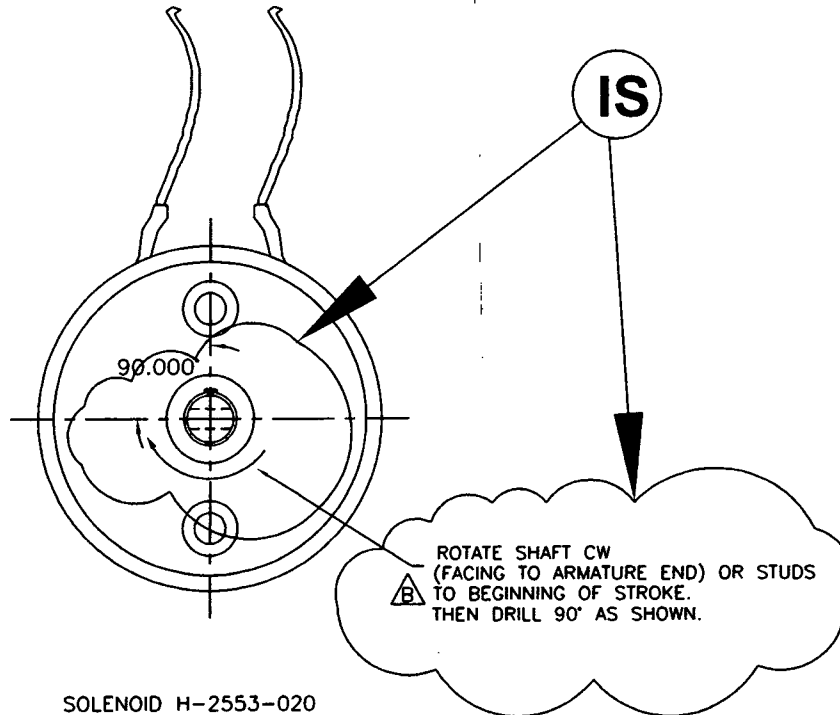
QC *[Signature]*

EFF: NEXT ORDER

TRANSACTION CODES (TC):  
A-ADD C-CREATE  
R-REVISE D-DELETE

REASON: REVISED SOLENOID DRAWING AS PER ECR 09-83

SHEET 1, ZONE 7-10,



SOLENOID H-2553-020

DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRU ☐ ICA ☐ BOM

CHANGE CATEGORY  
☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED  
☐ YES ☒ NO

APICAL  
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 02375

SHEET 1 OF 1

DWG NO. C45\_8\_2

REV: B

PREPARED  
BY A.QUAN

DATE: 04/16/09

EFFECT ON DWG.  
☐ INC. ☒ UNINC.

DWG TITLE: SOLENOID

APPROVED BY:

ENGR *E. Brann*

MFG

*Paul M. M.*

QC

*[Signature]*

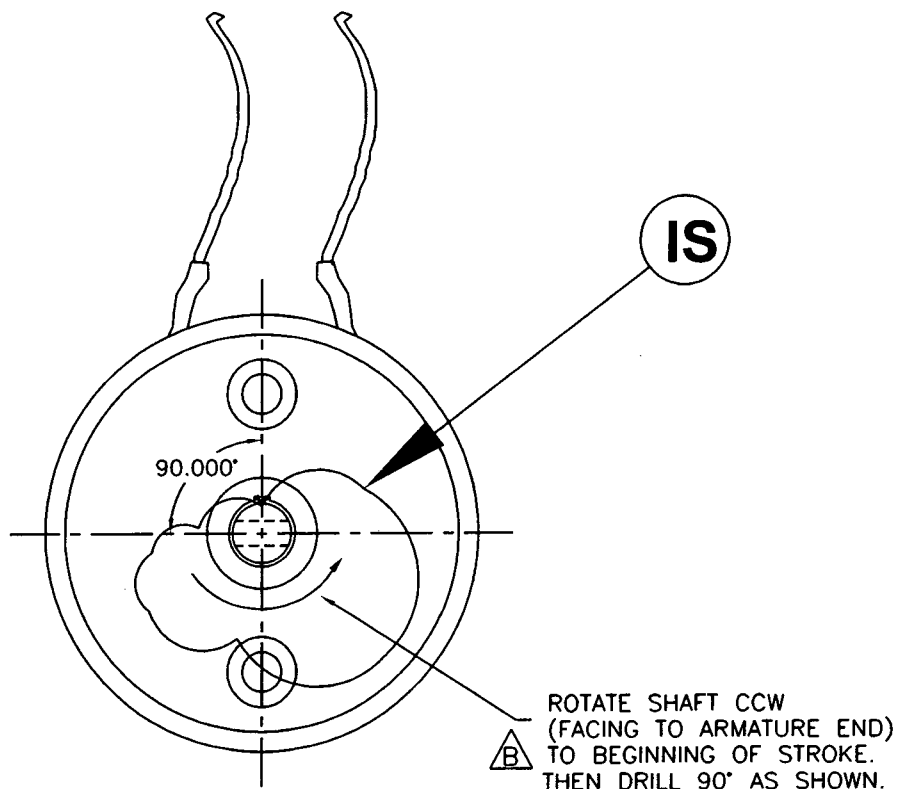
EFF:

NEXT ORDER

TRANSACTION CODES (TC):  
A-ADD C-CREATE  
R-REVISE D-DELETE

REASON: REVISED SOLENOID DRAWING

**SHEET 1, ZONE 7-10,**

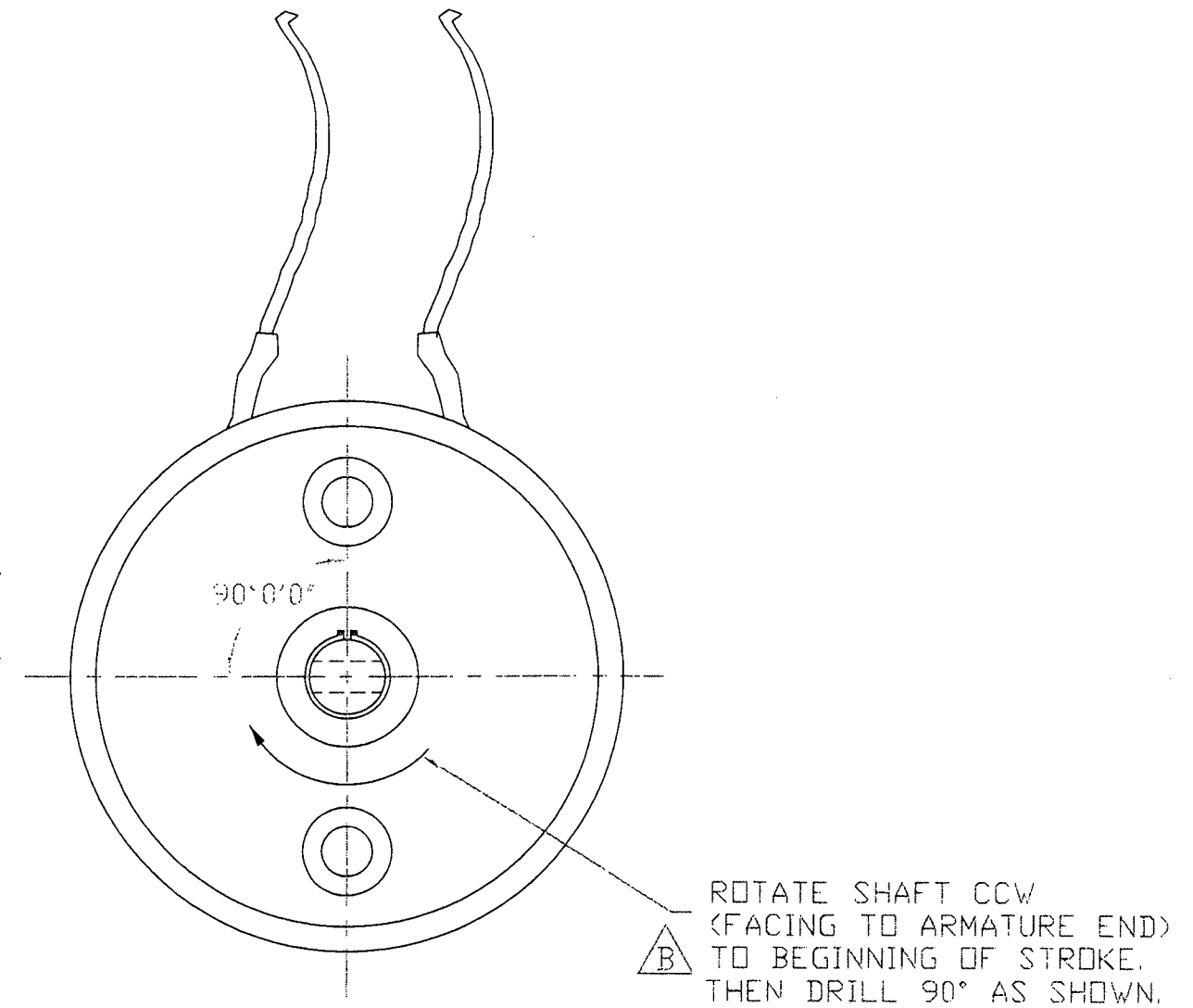
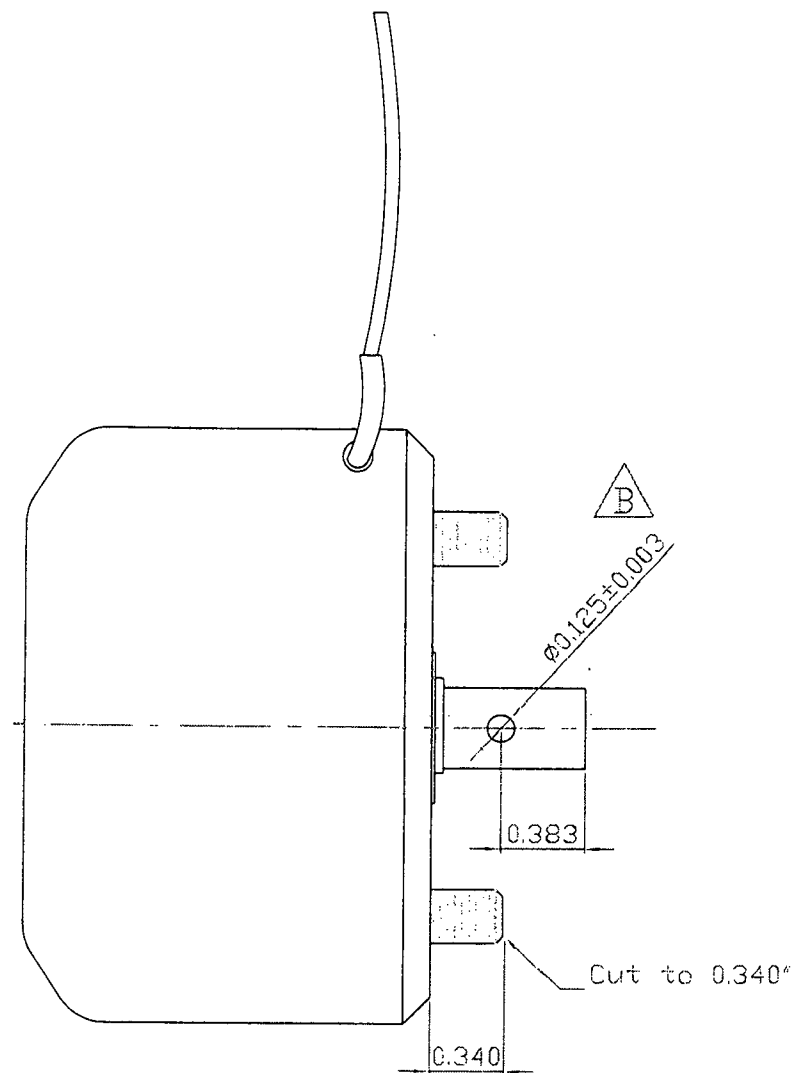


DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRU ☐ ICA ☐ BOM

CHANGE CATEGORY  
☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED  
☐ YES ☒ NO

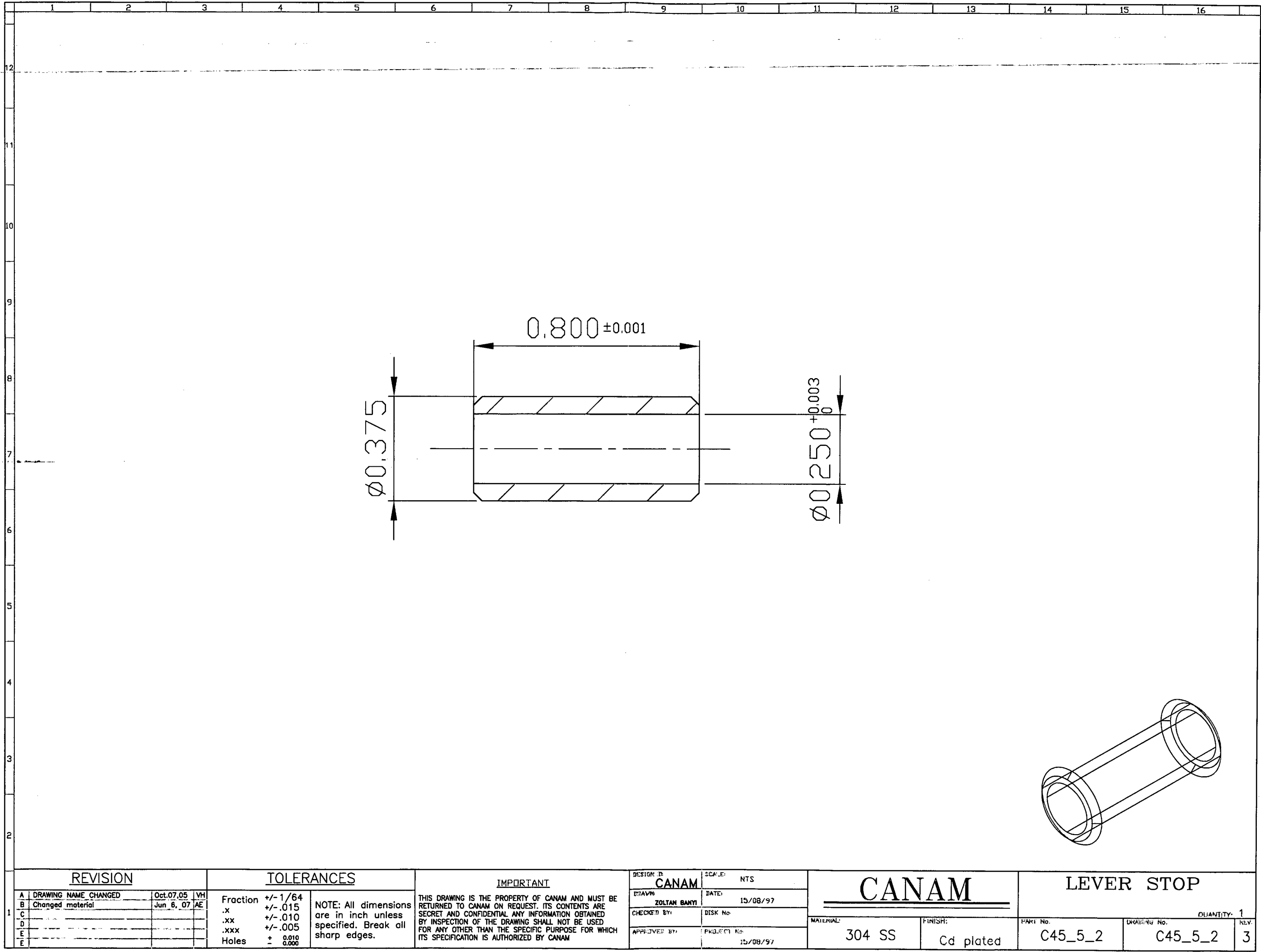


SOLENOID H-2553-020

**UNINCORPORATED ECN(s)**

02375, 02418,

REVISION		TOLERANCES		CANAM	CANAM		SOLENOID				
A		08/01/98	Fraction		+/- 1/64	ZOLTAN BANYI		C45_8_2		C45_8_2 2	
B	NOTE & TOLERANCE CHANGED	Jan.24.03. CAK	.x		+/- .015						
C			.xx		+/- .010						
D			.xxx		+/- .005						
E			Holer	+/- .005							
					THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM						



REVISION				TOLERANCES				IMPORTANT		DESIGN: <b>CANAM</b>	SCALE: NTS	<b>CANAM</b>		LEVER STOP		
A	DRAWING NAME CHANGED	Oct-07-05	VH	Fraction	+/- 1/64	NOTE: All dimensions are in inch unless specified. Break all sharp edges.	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM	DRAWN	DATE: 15/08/97	MATERIAL: 304 SS	FINISH: Cd plated	PART No. C45_5_2	DRAWING No. C45_5_2	QUANTITY: 1	REV. 3	
B	Changed material	Jun 6, 07	AE	.x	+/- .015			CHECKED BY: ZOLTAN BANYI	DISK No.							
C				.xx	+/- .010			APPROVED BY:	PROJECT No. 15/08/97							
D				.xxx	+/- .005											
E				Holes	+ 0.010 - 0.000											
E																

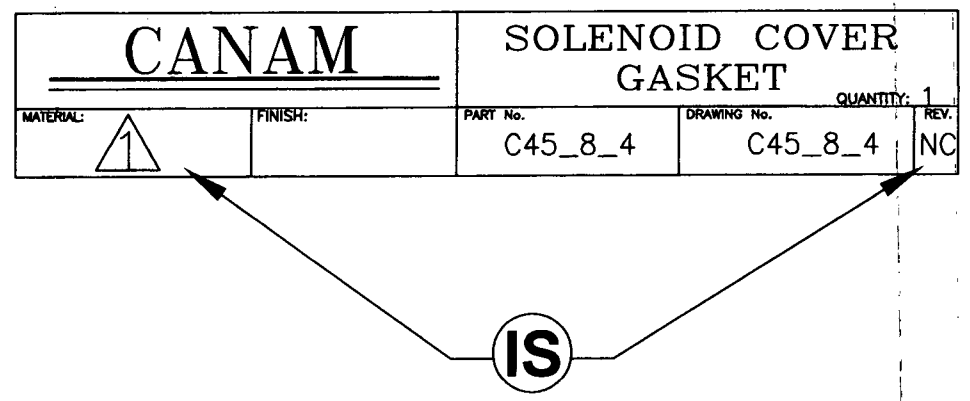
<b>APICAL</b> INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE NO. 02673				SHEET 1 OF 1	
	DWG NO. C45_8_4	REV: 1	PREPARED BY D.BARKER	DATE: 10/28/09	EFFECT ON DWG <input type="checkbox"/> INC. <input checked="" type="checkbox"/> UNINC.	
	DWG TITLE: SOLENOID COVER GASKET					
	APPROVED BY: ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: CURRENT ORDER		
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE	REASON: REVISED MATERIAL CALLOUT PER ECR 09-101, REVISED REV TO NC					

**SHEET 1, ZONE 2-2, ADDED NOTE 1 IS:**

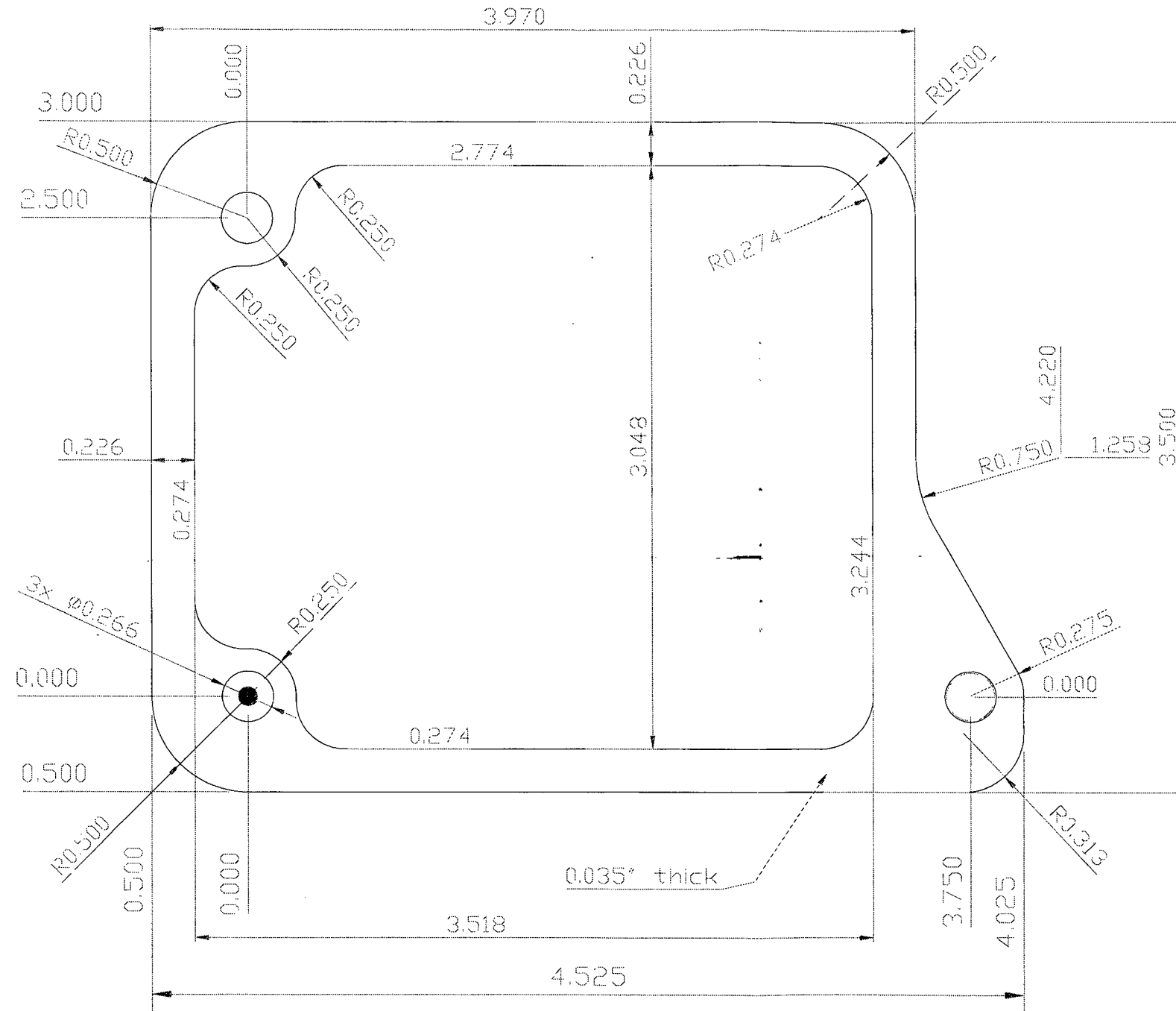
NOTES:

⚠ MATERIAL: .031" THICK GASKET PAPER  
 APICAL P/N: 600.0045  
 VENDOR: McMASTER-CARR  
 VENDOR P/N: 9556K88

**SHEET 1, ZONE 1-4 IS:**



F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:					CHANGE CATEGORY	DER REVIEW REQUIRED
<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRUC <input type="checkbox"/> ICA <input type="checkbox"/> BOM					<input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO



**UNINCORPORATED ECN(s)**

02673

REVISION		TOLERANCES		IMPORTANT THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	CANAM		SOLENOID COVER GASKET	
A	08/01/98	Fraction	+/- 1/64		CANAM			
B		.x	+/- .015		ZOLTAN BANYI			
C		.xx	+/- .010					
D		.xxx	+/- .005					
E		Holes	+ .010 - .005					
					Gasket paper 0.035"		C45_8_4	C45_8_4 1

APICAL  
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 02680

SHEET 1 OF 1

DWG NO. C45\_8\_5

REV: E

PREPARED  
BY

D.BARKER

DATE: 11/02/09

EFFECT ON DWG  
☐ INC. ☒ UNINC.

DWG TITLE: SOLENOID COVER

APPROVED BY:

ENGR

*P. Brava*

MFG

*Daniel Jones*

QC

*Manuel Lopez*

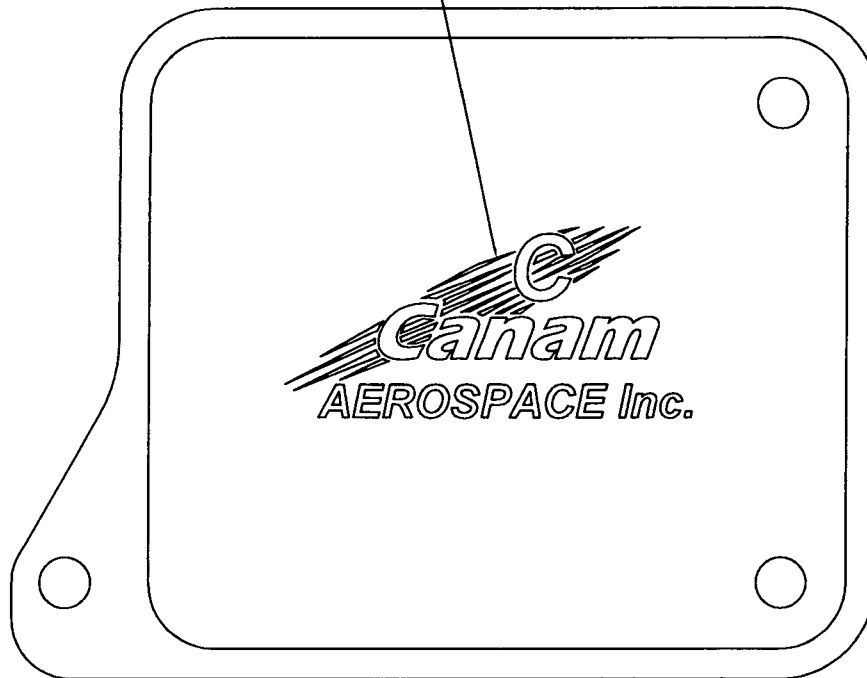
EFF: CURRENT ORDER

TRANSACTION CODES (TC):  
A-ADD C-CREATE  
R-REVISE D-DELETE

REASON: ADDED LOGO TO COVER PER ECR 09-103

**SHEET 1, ADDED VIEW ZONE 5-14 IS:**

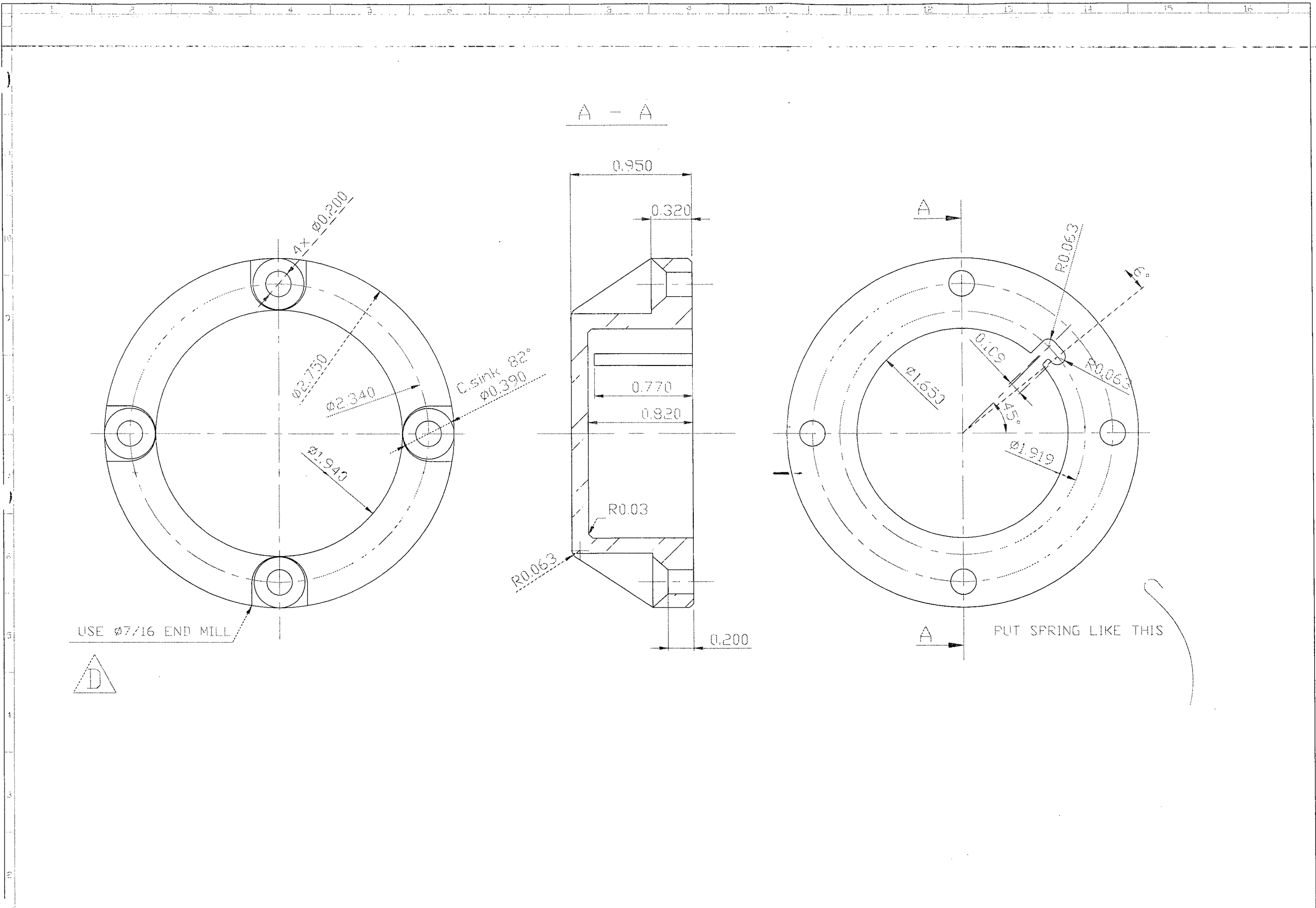
LOGO LASER ETCHED



F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:				<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRU <input type="checkbox"/> ICA <input type="checkbox"/> BOM	CHANGE CATEGORY <input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	DER REVIEW REQUIRED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

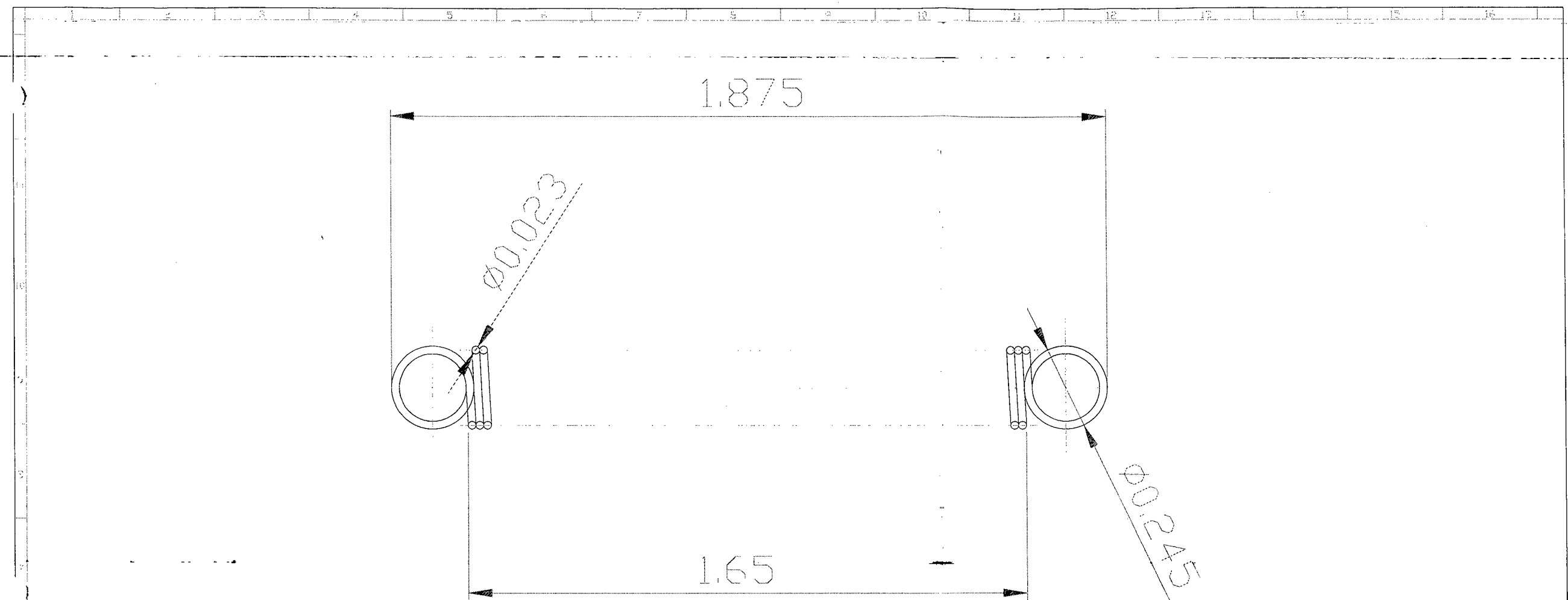






REVISION		TOLERANCES		IMPORTANT	CANAM		CLOCK SPRING COVER		
A	08/01/98	Fraction	$\pm 1/64$		CANAM				
B	Aug.17.01. CAK	.x	$\pm .015$	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	ZOLTAN BANYI				
C		.xx	$\pm .010$						
D	Jun.17.02. CAK	.xxx	$\pm .005$						
E	Apr.01.03. CAK								
F	Oct.07.05. VH	Holes	$\pm .0018$				6061	C45_9_1	C45_9_1 5





NOTE: PART TO BE MADE FROM 302 STAINLESS STEEL  
McMASTER-CARR PART NO. 9665K85

REVISION		TOLERANCES		IMPORTANT	CANAM		LOCK SPRING C45-HOOK		
A	CHANGED OVERALL LENGTH Jun.13.05 CT	Fraction	+/- 1/64		CANAM				
B	Changed material to 302 st. st. Mar 7, 07 AE	.x	+/- .015	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	CSABA A. KODOR, P.ENG.				
C		.xx	+/- .010						
D		.xxx	+/- .005						
E		Holes	+ .0010 - .0000		302 stainless steel		C45_10_2	C45_10_2	2

APICAL  
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 02333

SHEET 1 OF 1

DWG NO. C45\_11-1

REV: C

PREPARED  
BY A.QUAN

DATE: 03/03/09

EFFECT ON DWG:  
☐ INC. ☒ UNINC.

DWG TITLE: SIDE PLATE SOLENOID

APPROVED BY:

ENGR

MFG

QC

EFF:

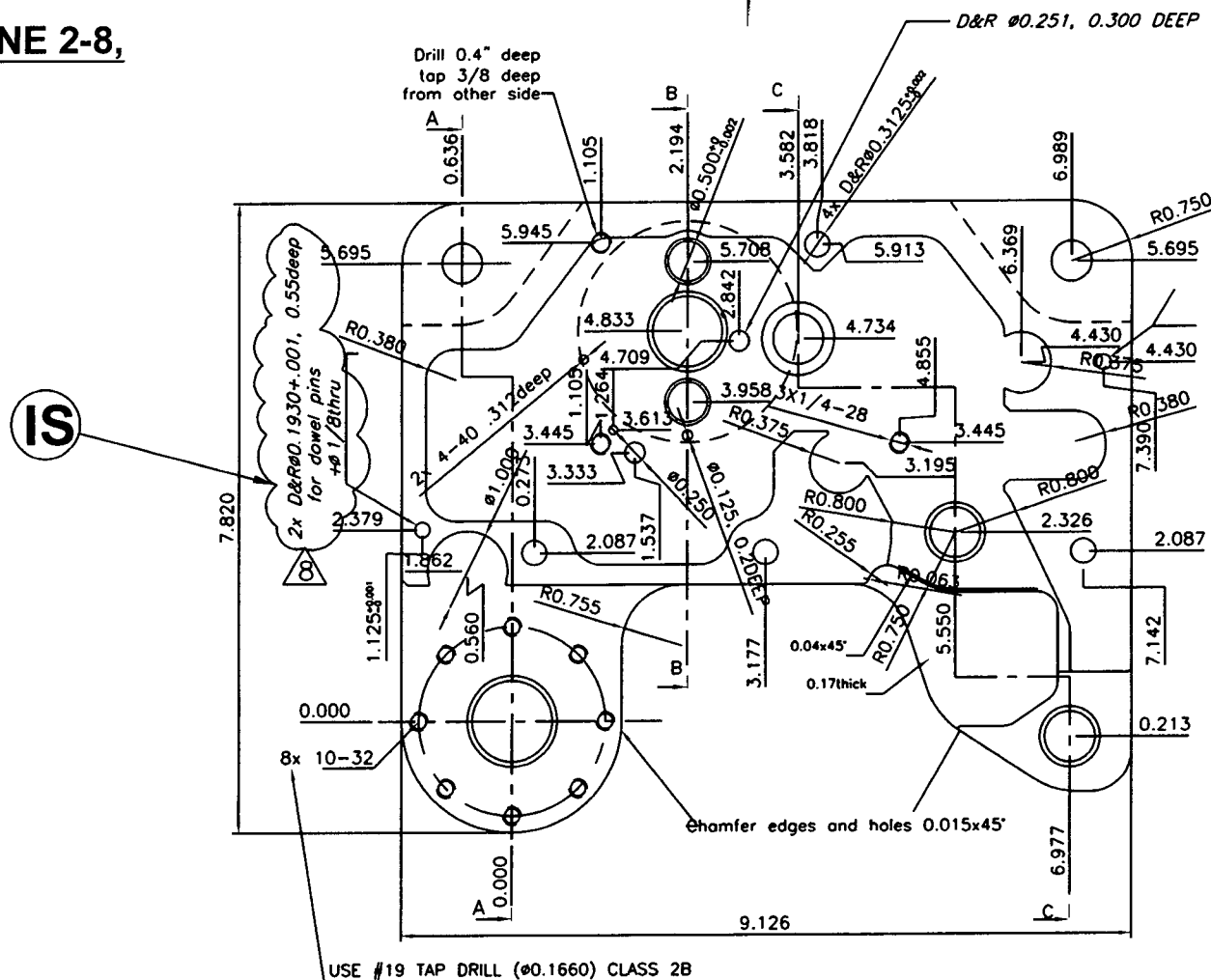
NEXT ORDER

TRANSACTION CODES (TC):  
A-ADD C-CREATE  
R-REVISE D-DELETE

REASON:

OPENED UP LOCATION HOLE TO ALLOW SLIP FIT AS PER CAI-C45-DRCF-0065-1-0

SHEET 1, ZONE 2-8,



DOCUMENTS EFFECTED:

☐ MDL

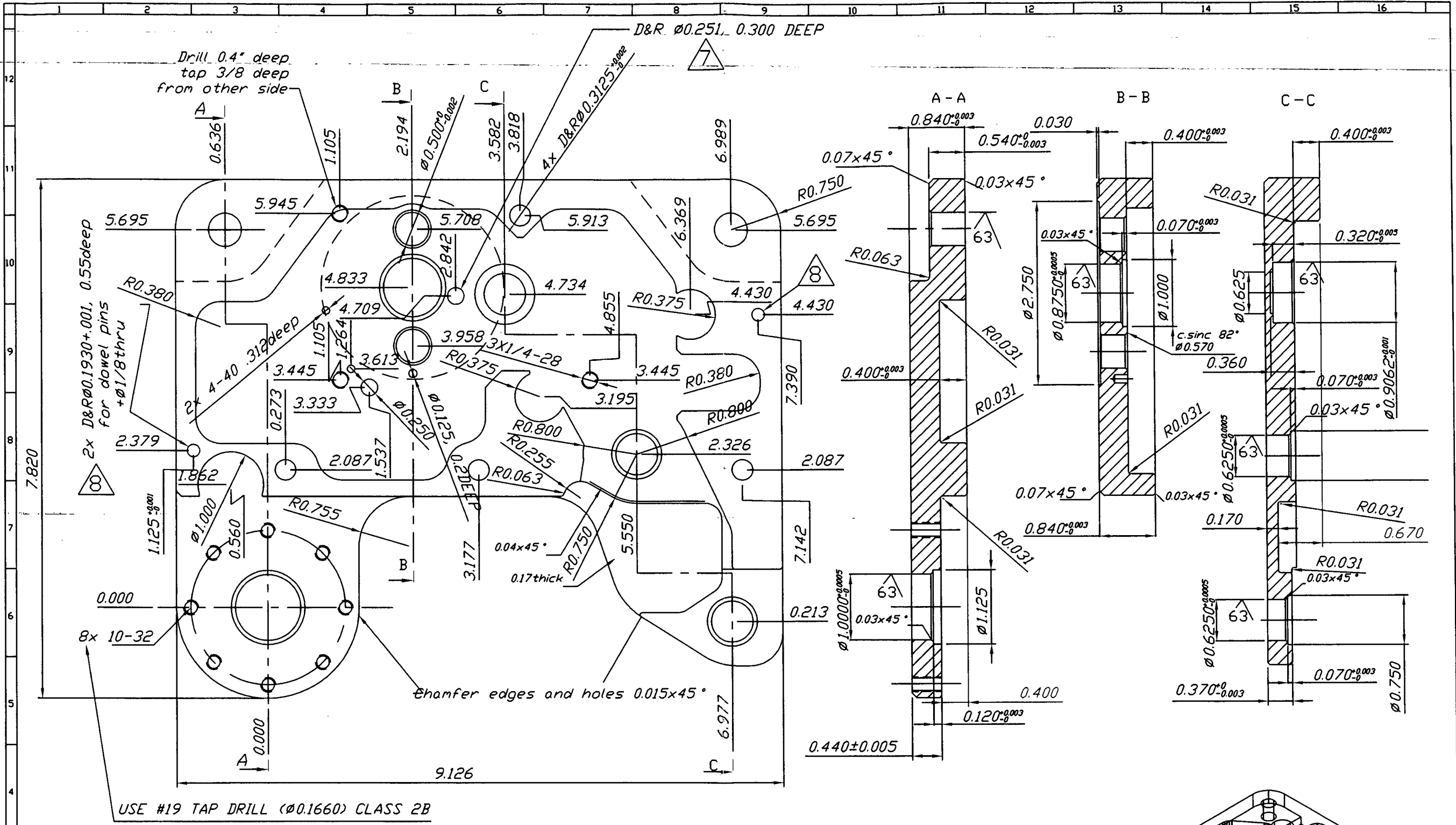
☐ INSTALL INSTRU

☐ ICA

☐ BOM

CHANGE CATEGORY  
☐ MAJOR ☒ MINOR

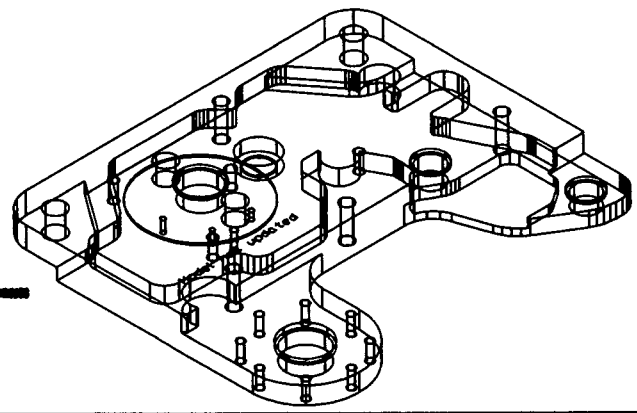
DER REVIEW REQUIRED  
☐ YES ☒ NO



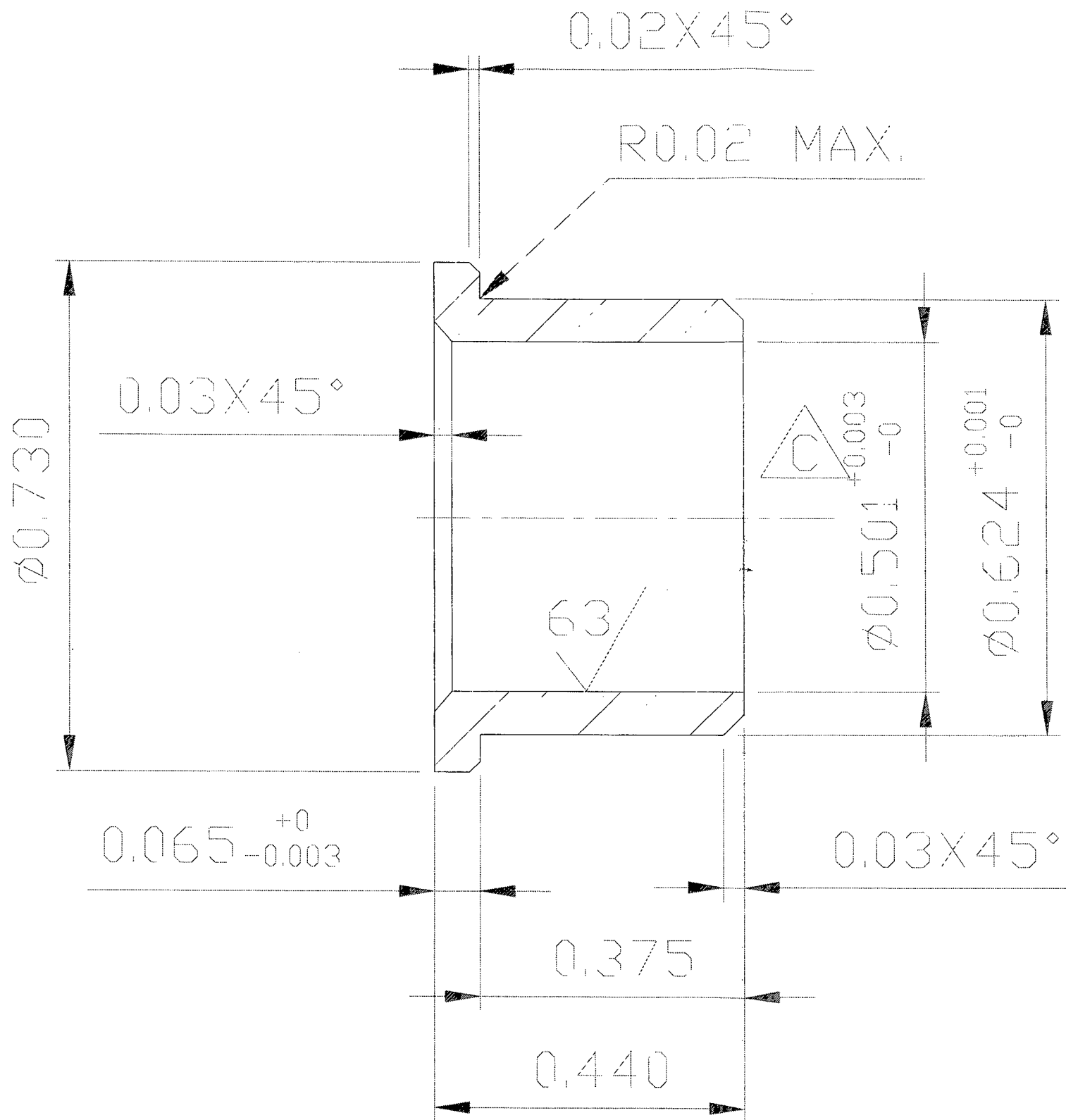
NOTE:  
1) TWO 4-40 TAPERED HOLES TO BE TAPERED BY HAND  
2) CHAMFER 0.030" ALL OVER

UNINCORPORATED ECN(s)

02333



REVISION			TOLERANCES			IMPORTANT		DESIGNED: CANAM		SCALE: NTS		CANAM		SIDE PLATE SOLENOID			QUANTITY: 1
A	HALF & HALF ARRANGEMENT	Apr.10.03. CAN	Fraction	+/- 1/64	NOTE: All dimensions are in inch unless specified. Break all sharp edges.	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM	DRAWN:	DATE:	CSABA A. KODOR, P.Eng.	Apr.10.03.	DISK No:	MATERIAL:	FINISH:	PART No.	DRAWING No.	REV.	
B	DIMENSIONS CHANGED	Mar.23.04. CAN	.x	+/- .015			CHECKED BY:	PROJECT No:									7075-T6
C	LOCATING PIN #3/16	May.03.04. CAN	.xx	+/- .010			APPROVED BY:	13/05/97									
D			.xxx	+/- .005													
E			Holes	+ 0.010													
F				0.000													



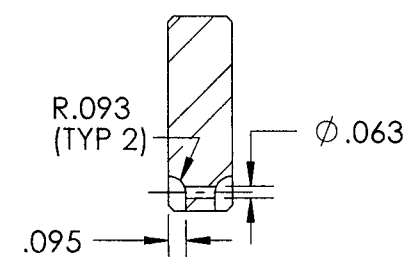
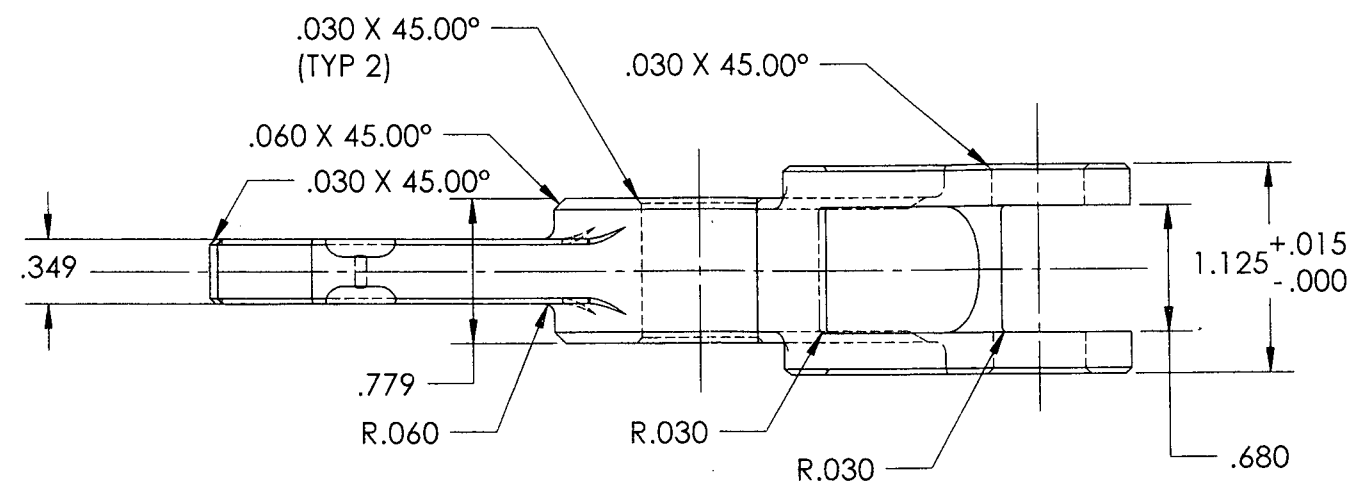
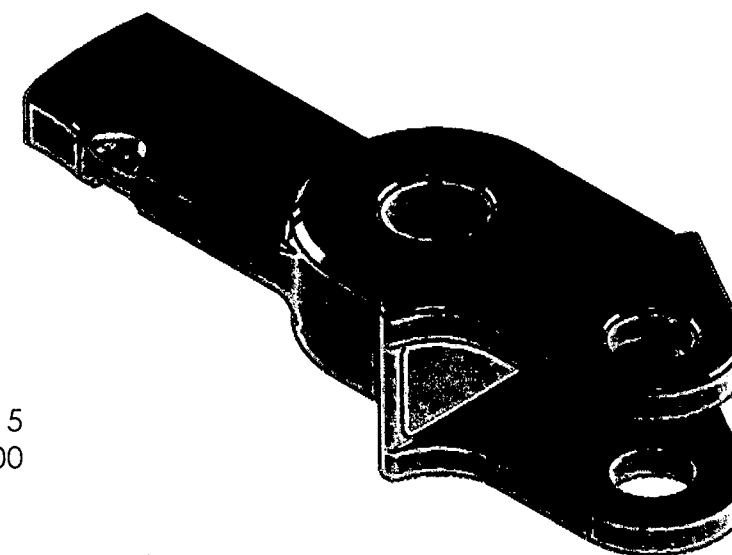
REVISION			TOLERANCES		(MILITARY)	CANAM		CANAM		LOCK BUSHING					
A	08/01/98		Fraction	$\pm 1/64$		THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	CANAM		<u>CANAM</u>		4140 45-48RC	Nickel plated	C45_12_1	C45_12_1	3
B	Dec.06.01		.x	$\pm .015$			ZOLTAN BANYI								
C	Jun.04.03. CAK		.xx	$\pm .010$											
D			.xxx	$\pm .005$											
E			Holes	$\pm .0010$ $\pm .0009$											

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

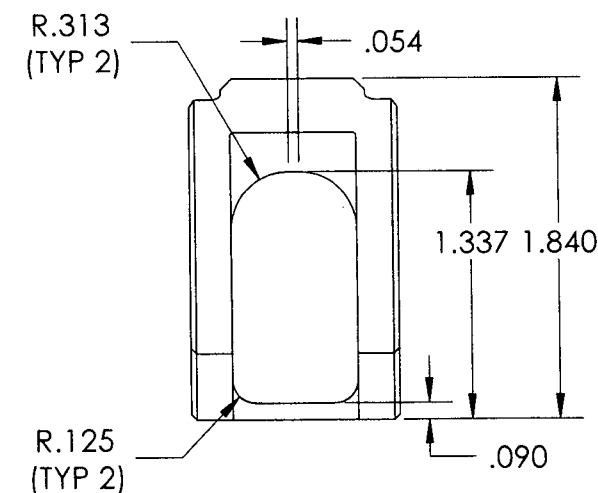
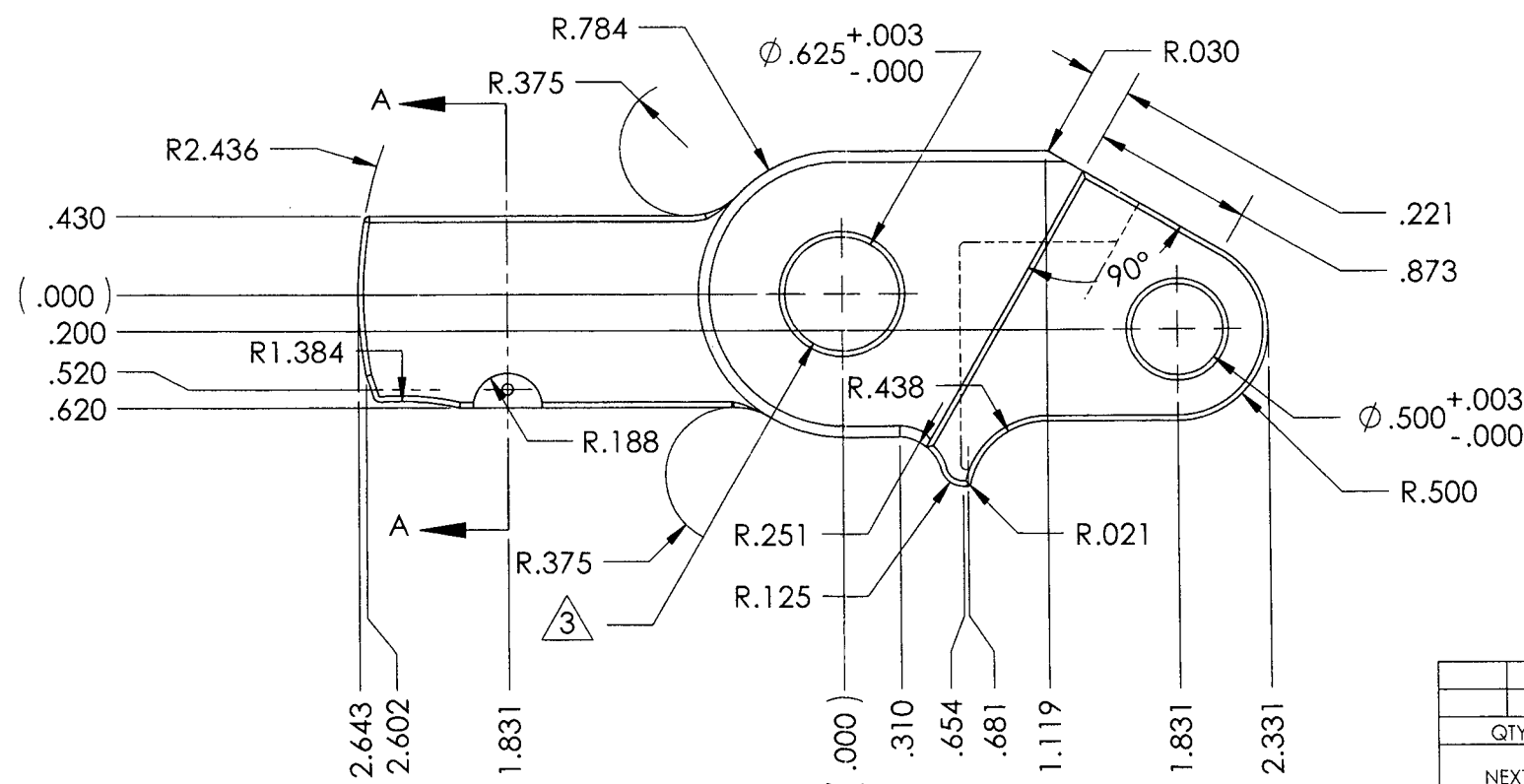
# NOTES:

- 1 MATERIAL: 4340 ANN. ALLOY STEEL;  
ROCKWELL HARDNESS 44-46
- 2 FINISH: 0.0005 INCH THICK NICKEL  
PLATING, BAKE AFTER PLATING;  
DIMENSIONS AFTER PLATING
- 3 CALIBRATE HOLE AFTER HEAT  
TREATING AND POLISH ROLLER AREA

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
4	LAST CANAM REVISION	03-06-00	Z.BANYI
N/C	INCORPORATED ECN 02997	11-03-10	P.BRAVO

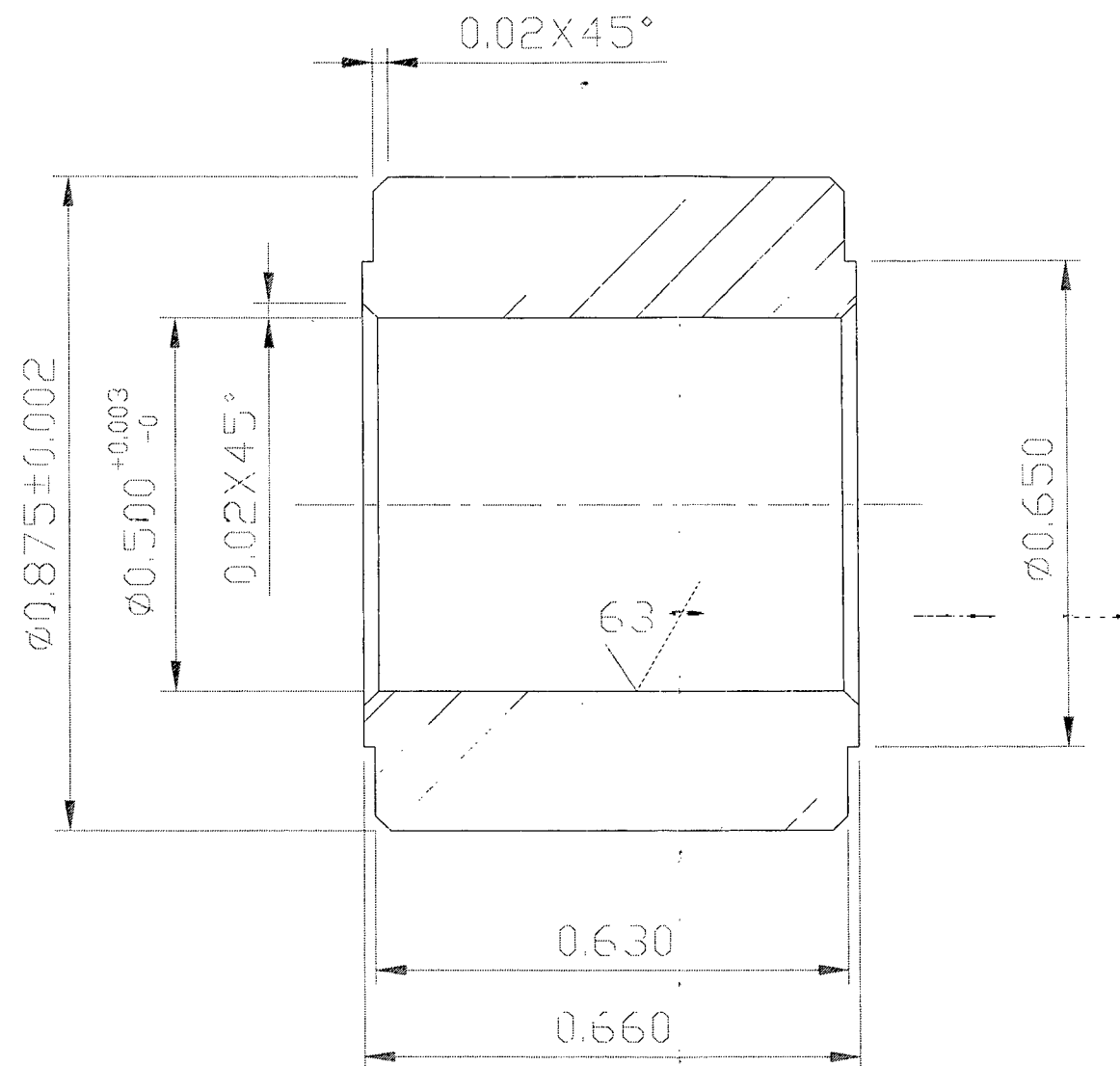


SECTION A-A



C45-12-3		LOCK		△	△
FIND NO.	PART NO.	DESCRIPTION		MAT'L	SPEC
QTY		PARTS LIST			
NEXT ASSY (S)		ORIGINAL DATE (MO-DA-YR)	03-06-00	<b>APICAL INDUSTRIES</b> 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300 <b>LOCK, C45 HOOK</b>	
		DRAWN BY	CHECKER		
		Z.BANYI	Z.BANYI		
		DRAWING APPROVAL			
		Z.BANYI		SIZE B CAGE CODE 07M26 DWG. NO. C45-12-3 REV. N/C	
		CONTRACT NO.			
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.010 3 PLACE DECIMALS ±.005 ANGLES ± .5°		SCALE NONE SHEET 1 OF 1	



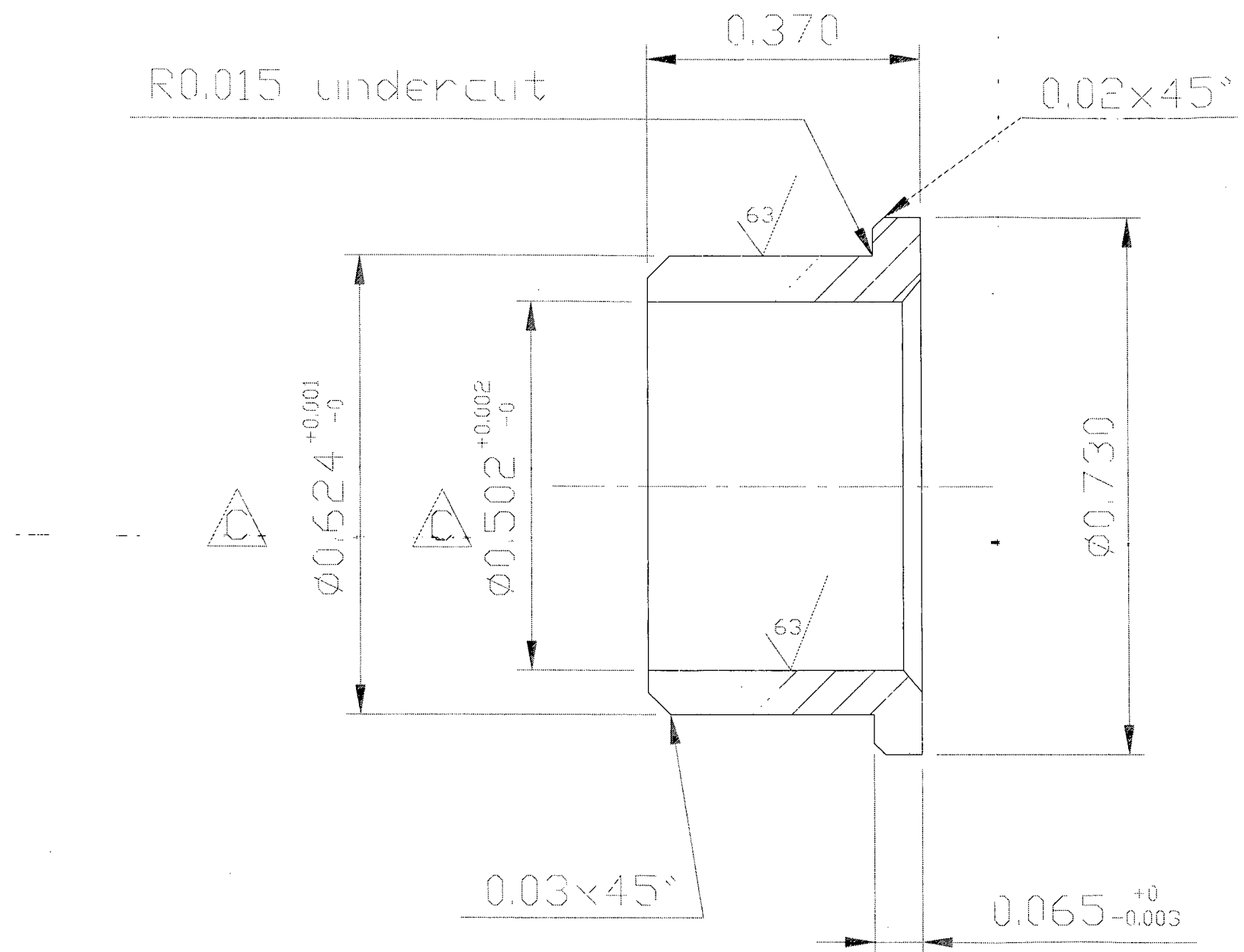


125

POLISH OD & ID AFTER HT.

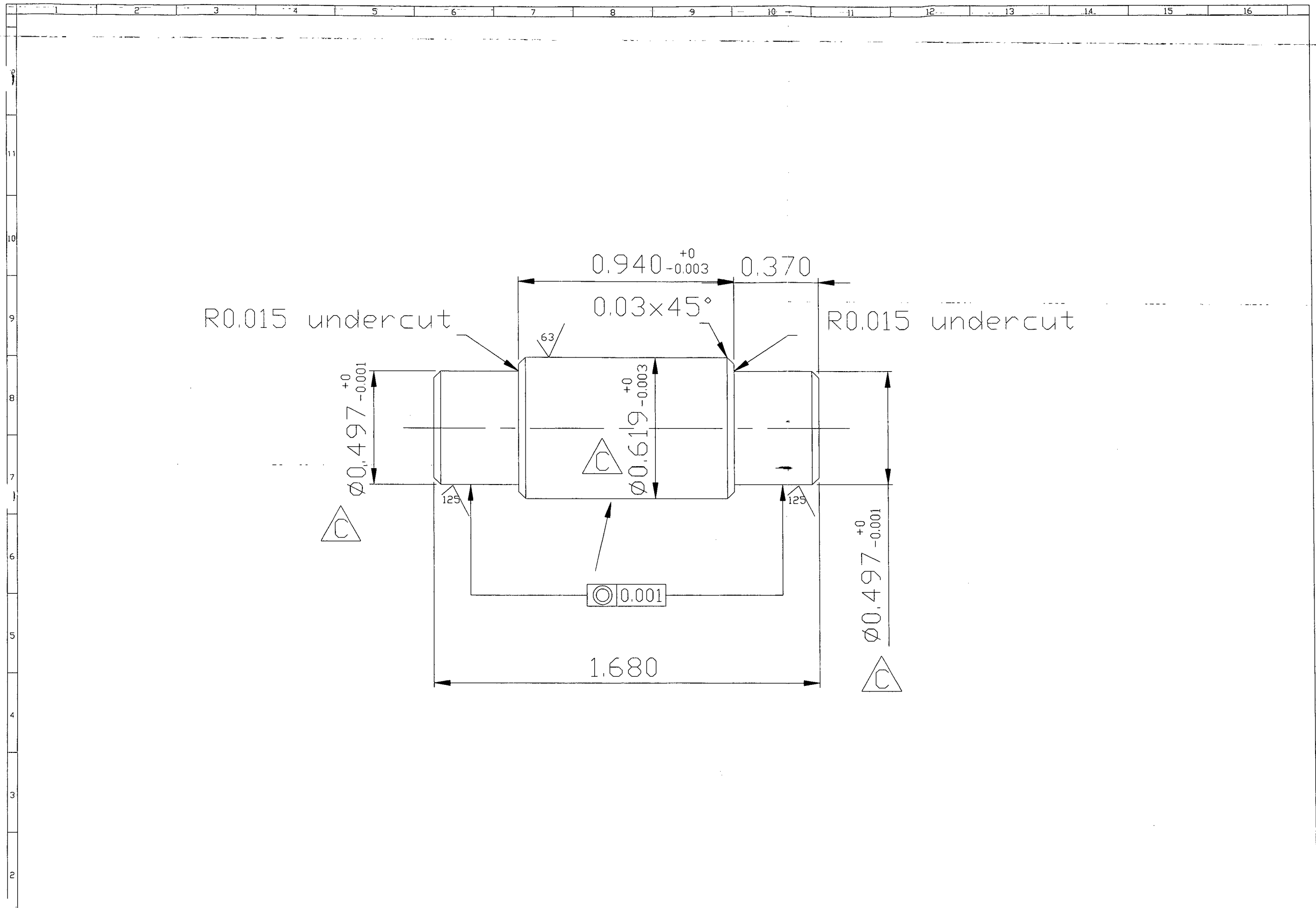
REVISION		TOLERANCES		UNCLASSIFIED	CANAM		CANAM		LOCK ROLLER		
A	DIMENSION ADDED	Aug.01.01	Fraction $\pm 1/64$	NOTE: All dimensions are in inch unless specified. Break all sharp edges.	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.		ZOLTAN BANYI				
B	PLATING, TOLERANCES ADDED	Sep.21.04. CAK	$\pm .015$								
C			$\pm .010$								
D			$\pm .005$								
E			Holes $\pm 0.010$ $\pm 0.000$								
							S7 54-56RC		C45_12_4	C45_12_4	2



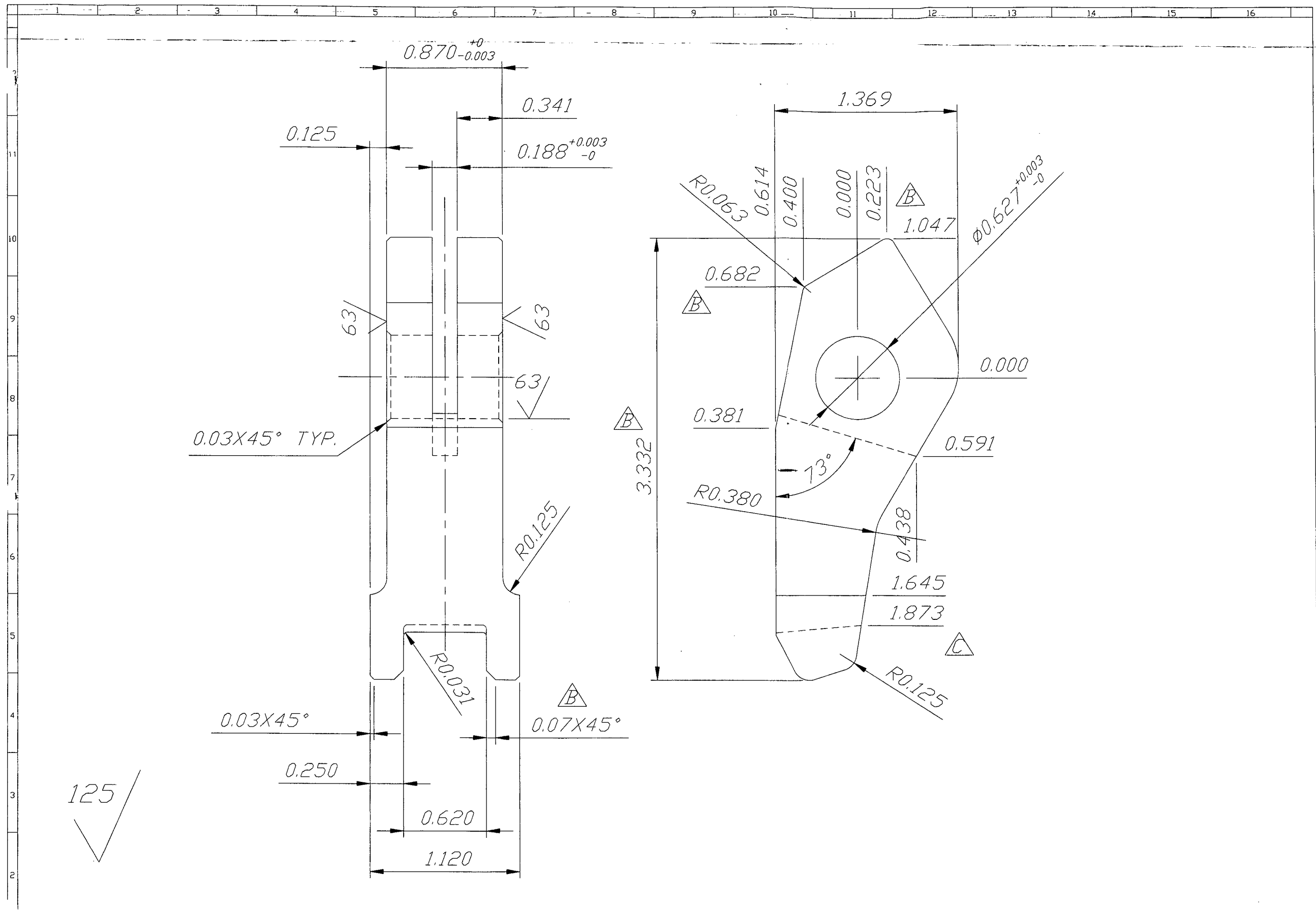


Calibrate after H.T

REVISION		TOLERANCES		IMPORTANT	CANAM		KEEPER BUSHING		
A	09/01/98	Fraction	± 1/64		CANAM				
B	OD & ID CHANGED Jun 10.02. CAK	.x	± .015	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.	ZOLTAN BANYI				
C	OD. & ID. TOLERANCE CHANGED Jun.03.03. CAK	.xx	± .010						
D		.xxx	± .005						
E		Holes	± 0.010 0.003						
						4140 45-48RC	C45_13_1	C45_13_1	3



REVISION				TOLERANCES				IMPORTANT				DESIGNED BY: CANAM		SCALE:		CANAM				KEEPER SHAFT														
A			09/01/98		Fraction	+/- 1/64	NOTE: All dimensions are in inch unless specified. Break all sharp edges.	THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM	DRAWN:	ZOLTAN BANYI			DATE:	14/05/97			MATERIAL:	4140 34-36RC		FINISH:	Nickel plated		PART No.	C45_13_3		DRAWING No.	C45_13_3		QUANTITY: 1	REV.				
B	.623 red. to .62 at assy. request		21/09/00		.x	+/- .015			CHECKED BY:				DISK No.																		PROJECT No:	14/05/97		
C	OD'S CHANGED		Jun.04.03.	CAK	.xx	+/- .010																												
D					.xxx	+/- .005																												
E					Holes	+ 0.010 - 0.000																												



REVISION			TOLERANCES		IMPORTANT	DESIGNED BY: CANAM		SCALE: NTS		CANAM		KEEPER C45 HOOK		QUANTITY: 1	REV.
A	SHAPE CHANGED	Oct.02.02. CAK	Fraction	+/- 1/64		DRAWN BY:	DATE:								
B	TOP CHANGED	Jan.09.03. CAK	.x	+/- .015	NOTE: All dimensions are in inch unless specified. Break all sharp edges.	CHECKED BY:	DISK No:			MATERIAL: 4140 40-44RC	FINISH: Nickel plated	PART No. C45_13_4	DRAWING No. C45_13_4		9
C	SHAPE CHANGED	Feb.06.03. CAK	.xx	+/- .010											
D			.xxx	+/- .005											
E			Holes	+ 0.010 - 0.000		APPROVED BY:	PROJECT No:								
							Sep.20.02.								

THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM

APICAL  
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 02497

SHEET 1 OF 1

DWG NO. C45\_13\_5

REV: 1

PREPARED BY J. GARDINER

DATE: 07/13/09

EFFECT ON DWG  
☐ INC. ☒ UNINC.

DWG TITLE: KEEPER SPRING

APPROVED BY:

ENGR

*P. Bram*

MFG

*[Signature]*

QC

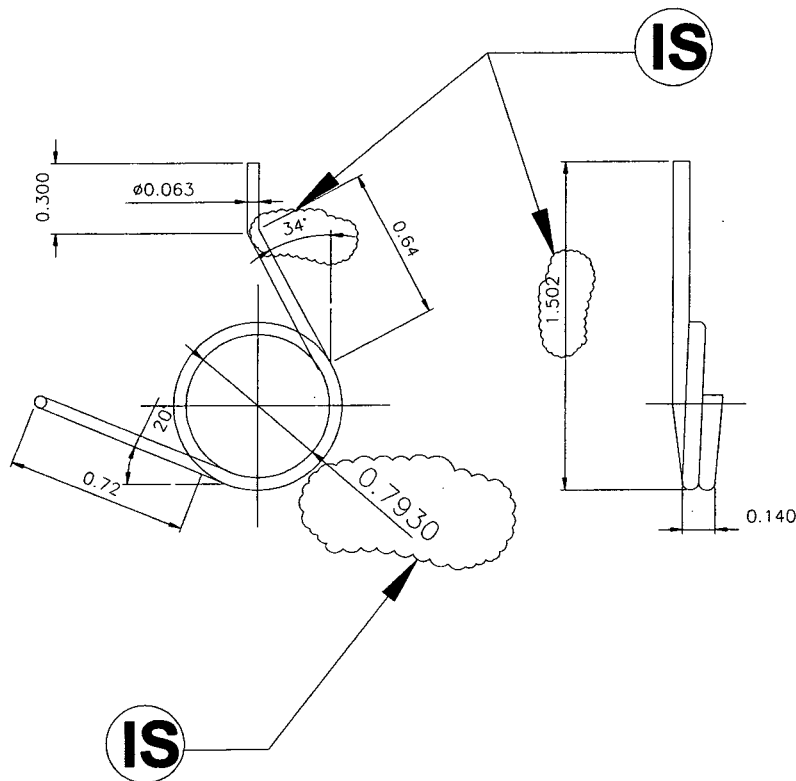
*[Signature]*

EFF: NEXT ORDER

TRANSACTION CODES (TC):  
A-ADD C-CREATE  
R-REVISE D-DELETE

REASON: REVISED DIMENSIONS AND REV TO NC

**SHEET 1, ZONE 7-6 IS:**



**SHEET 1, ZONE 1-4 IS:**

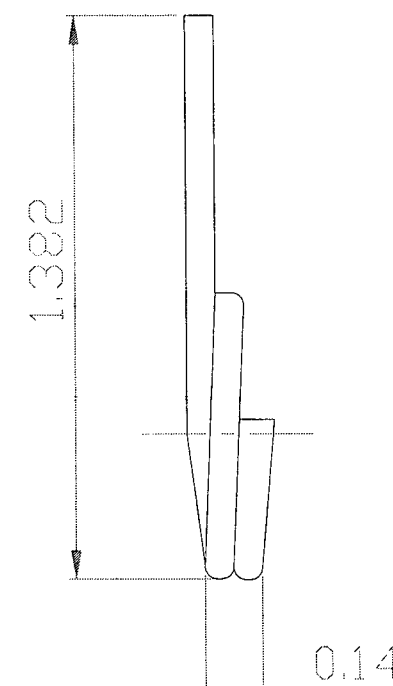
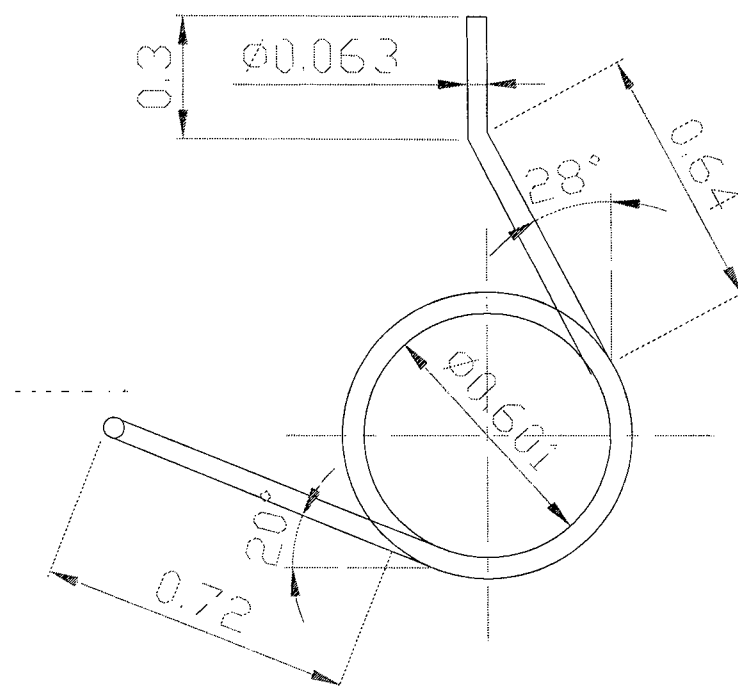
KEEPER SPRING			
PART No.	DRAWING No.	QUANTITY: 1	REV.
C45_13_5	C45_13_5	NC	

IS

F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:				CHANGE CATEGORY	DER REVIEW REQUIRED	
				<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRUC <input type="checkbox"/> ICA <input type="checkbox"/> BOM	<input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

UNINCORPORATED ECN(s)

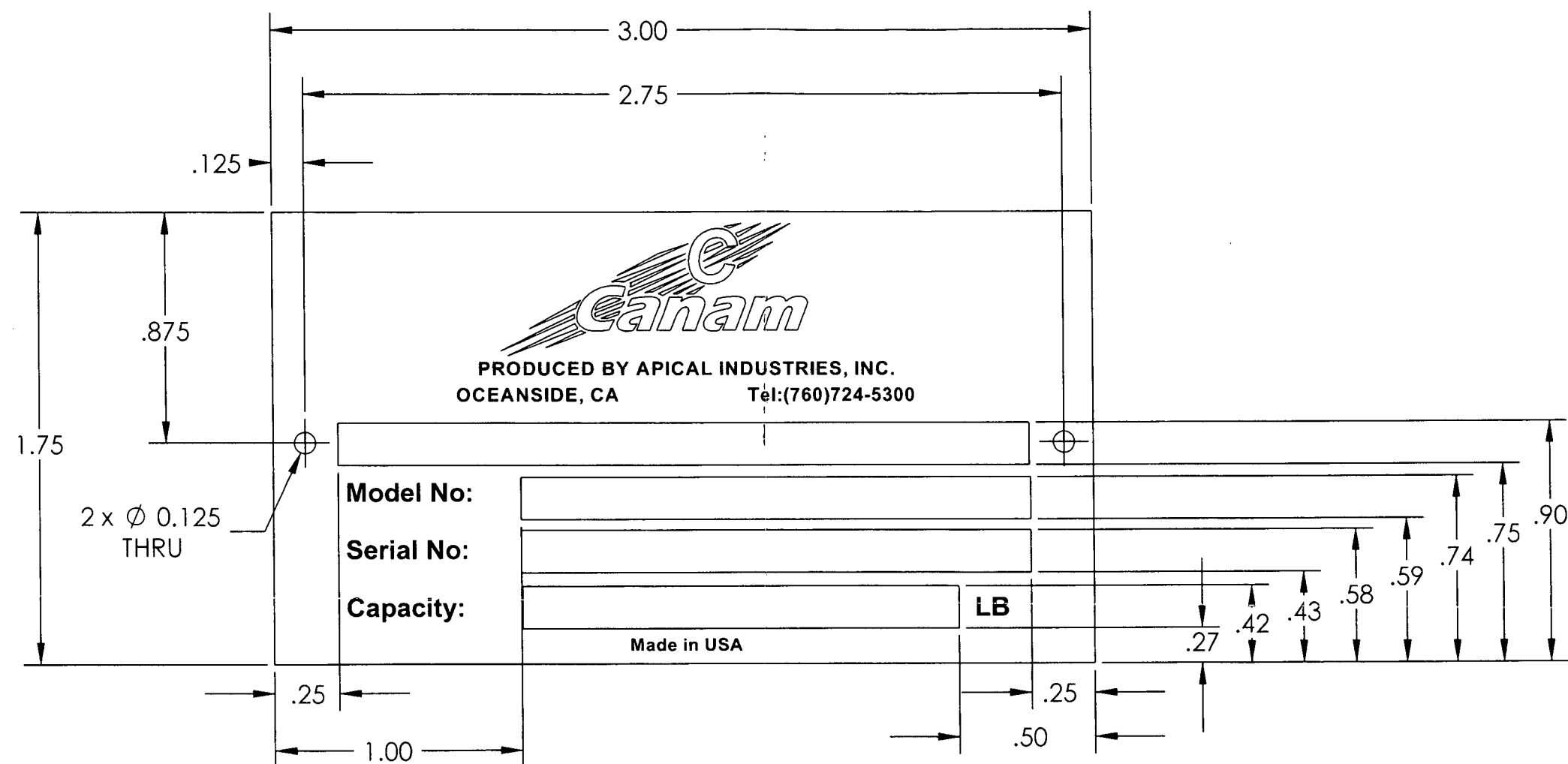
02497



REVISION			TOLERANCES		IMPORTANT	DESIGNED		SCALE		CANAM		KEEPER SPRING					
A		09/01/98	Fraction	+/- 1/64		DRAWN	CANAM	DATE	15/05/97	CHECKED BY	ZOLTAN BANYI	DISK No	MATERIAL	FINISH	PART No.	DRAWING No	QUANTITY: 1
B			.x	+/- .015	NOTE: All dimensions are in inch unless specified. Break all sharp edges.												
C			.xx	+/- .010													
D			.xxx	+/- .005													
E			Holes	+ .0010 - .0009													
THIS DRAWING IS THE PROPERTY OF CANAM AND MUST BE RETURNED TO CANAM ON REQUEST. ITS CONTENTS ARE SECRET AND CONFIDENTIAL. ANY INFORMATION OBTAINED BY INSPECTION OF THE DRAWING SHALL NOT BE USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH ITS SPECIFICATION IS AUTHORIZED BY CANAM.						APPROVED BY:		PROJECT No:	15/05/97			303		C45_13_5	C45_13_5		

REVISION			
REV.	DESCRIPTION	DATE	APR.

1. MATERIAL:5052 UNSEALED ANODIZED ALUMINUM, 0.032" THICKNESS
2. BACKGROUND COLOR RED
3. TEXT, TEXT BOXES, AND LOGO NO PAINT

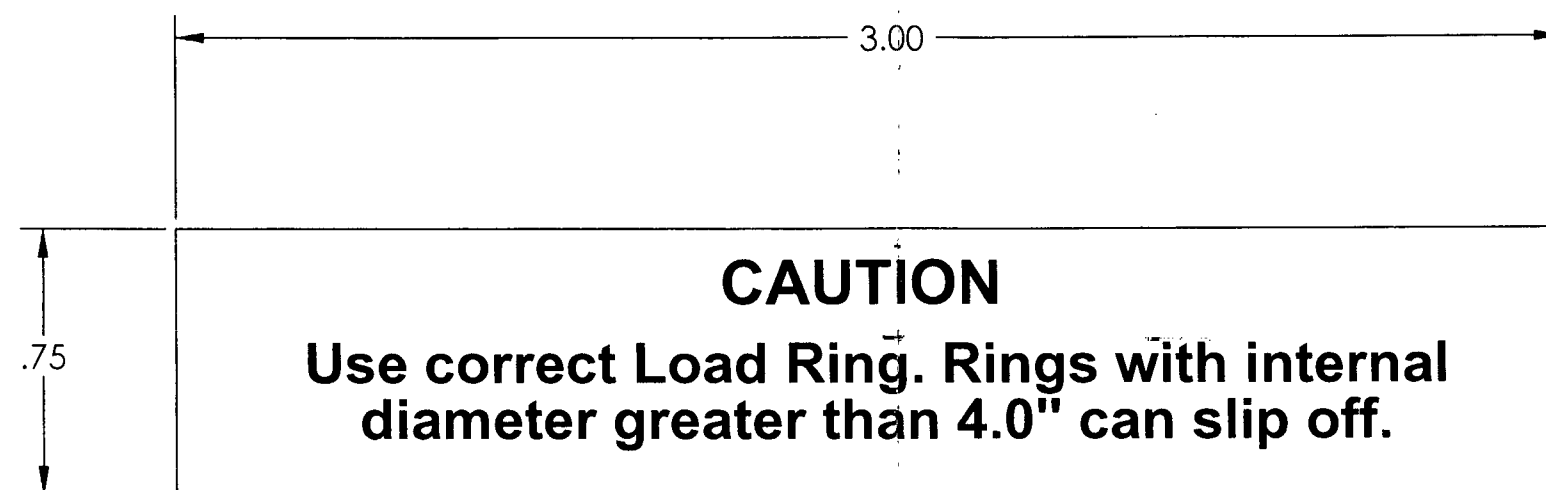


NEXT ASSY (S)	ORIGINAL DATE (DA-MO-YR)	2/17/09		APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300			
	DRAWN BY A.Q.	CHECKER D.B.	2/17/09				
	DRAWING APPROVAL P.B.	2/17/09		CANAM PLATE ID LABEL			
	CONTRACT NO.						
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ± .03 3 PLACE DECIMALS ± .010 ANGLES ± .2°			SIZE B	CAGE CODE 07MZ6	DWG. NO. 600.1309	REV. N/C
SCALE: NONE				SHEET 1 OF 1			



NOTES:

- MATERIAL: BLACK BACKGROUND, LABEL MAT'L TO BE  
.004 WHITE VINYL WITH RUBBER BASED SOLVENT ADHESIVE,  
UV PRINTED 1 MIL CLEAR OVERLAMINATION
- TEXT: ARIAL BOLD CAPS, SIZE 22, YELLOW, BACKGROUND BLACK



NEXT ASSY (S)	ORIGINAL DATE (DA-MO-YR)	2/17/09	
	DRAWN BY A.GUAN	CHECKER D.BARKER	
	2/17/09		
	DRAWING APPROVAL P.BRAVO		
	2/17/09		
	CONTRACT No.		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ± .03 3 PLACE DECIMALS ± .010 ANGLES ± 2°		SIZE B	CAGE CODE 07MZ6
		DWG. NO. 600.1312	REV. N/C
		SCALE: NONE	
		SHEET 1 OF 1	

**APICAL INDUSTRIES**  
2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5300

**C45 WARNING LABEL**

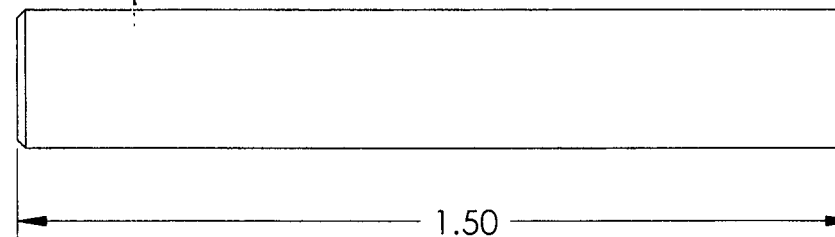
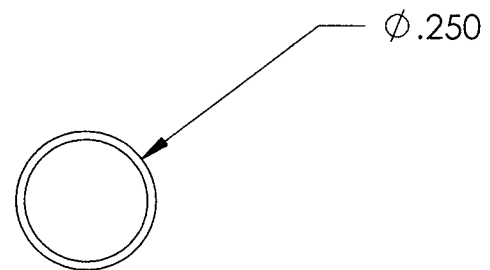
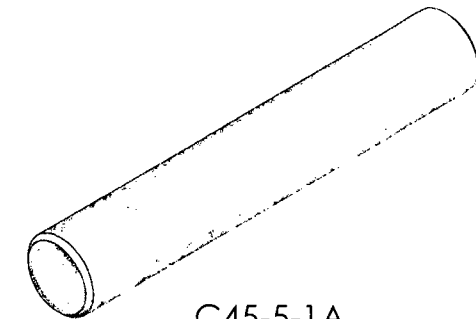
1 2 3 4 5 6 7 8

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF  
APICAL INDUSTRIES ANY REPRODUCTION IN PART OR WHOLE WITHOUT  
THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

NOTES:

1. VENDOR: MCMASTER-CARR, VENDOR P/N: 90145A546  
2. MATERIAL: 18-8 STAINLESS STEEL, FINISH: PLAIN



SOURCE CONTROL DRAWING

QTY		PARTS LIST			
NEXT ASSY (S)	ORIGINAL DATE (MO-DA-YR) 01-25-10	<b>APICAL INDUSTRIES</b> 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300			
	DRAWN BY R. ROSANO				
	CHECKER D. BARKER				
	DRAWING APPROVAL P. BRAVO 01-25-10				
	CONTRACT No.	DOWEL PIN			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ± .5°		SIZE B	CAGE CODE 07MZ6	DWG. NO. C45-5-1A	REV. N/C
SCALE NONE				SHEET 1 OF 1	

<b>APICAL</b> INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE NO. 02703				SHEET 1 OF 1	
	DWG NO. C45_4_2	REV: N/C	PREPARED BY D.BARKER	DATE: 11/30/09	EFFECT ON DWG <input type="checkbox"/> INC. <input checked="" type="checkbox"/> UNINC.	
	DWG TITLE: TRUNNION C45-HOOK					
	APPROVED BY: ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: CURRENT ORDER		
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE	REASON: REVISED MATERIAL IN NOTE 1 PER ECR 09-105.					

### SHEET 1, ZONE A1, NOTE 1 IS:

$\triangle 1$  MATERIAL: 4340 STEEL. FINISHED PART TO BE HEAT TREATED TO  
ROCKWELL C 34-37.

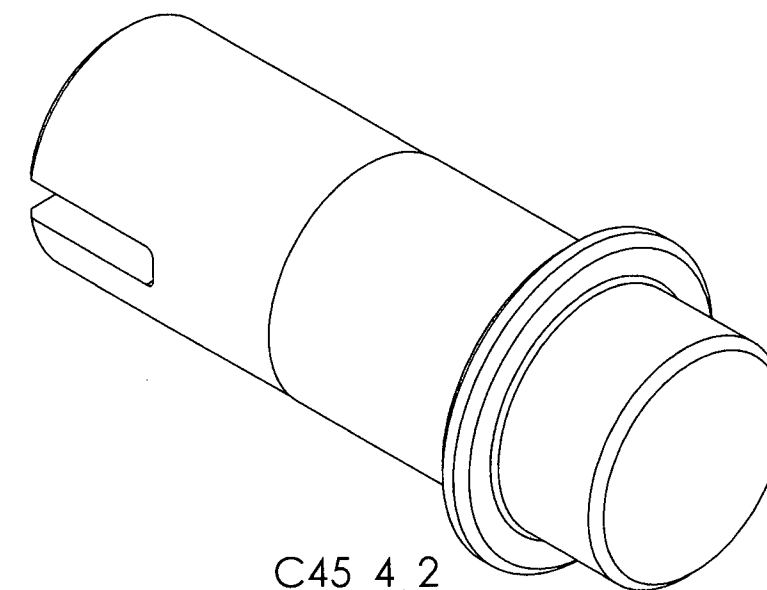
F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:					CHANGE CATEGORY	DER REVIEW REQUIRED
<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRU <input type="checkbox"/> ICA <input type="checkbox"/> BOM					<input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

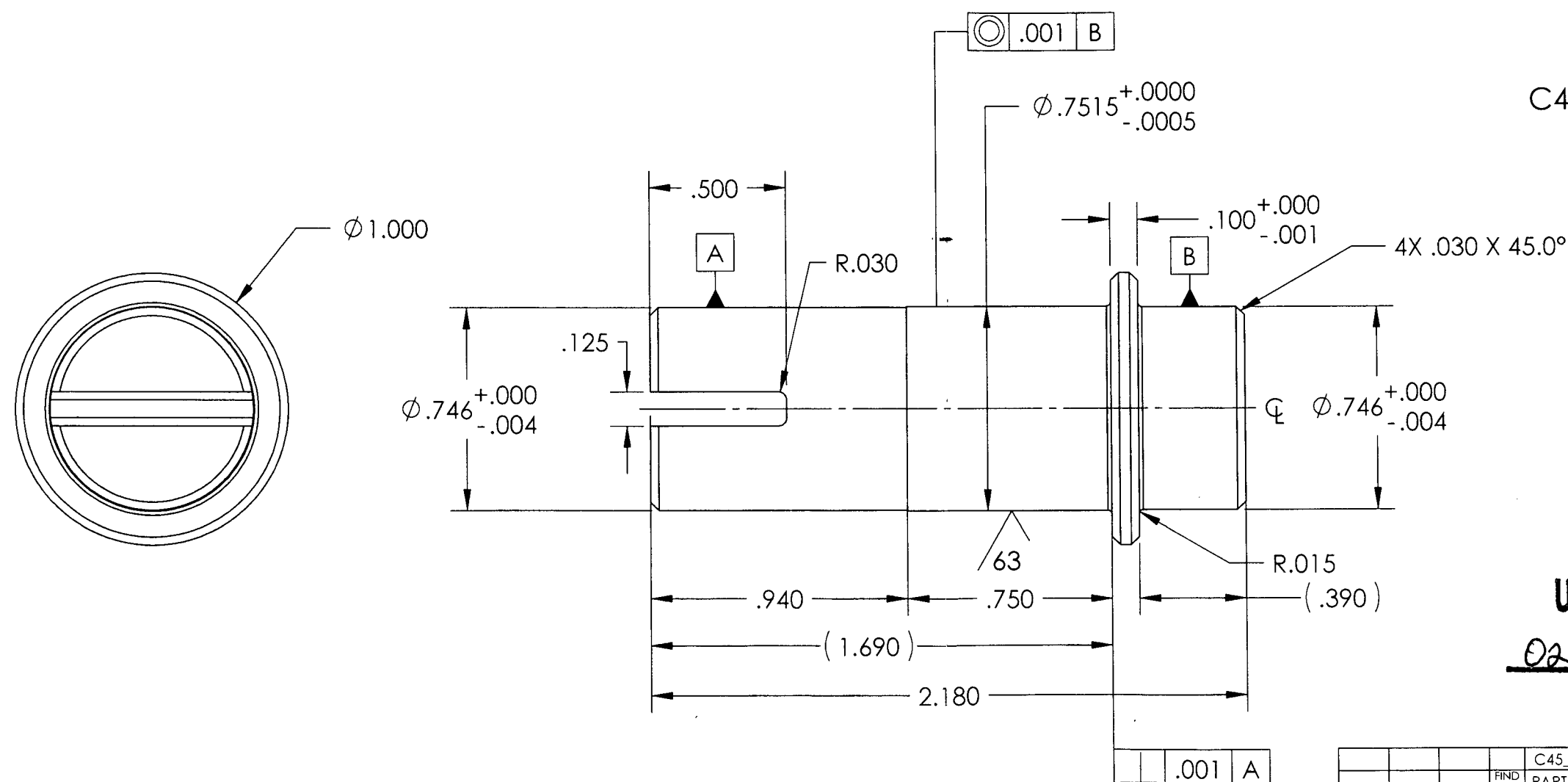
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	LAST PROTOTYPE REVISION: NONE	N/A	N/A
7	LAST CANAM RELEASE	02/14/05	CAK
N/C	INCORPORATED ECN 02692	11/17/09	P. BRAVO

# NOTES:

- MATERIAL: 4140 ANN STEEL. FINISHED PART TO BE HEAT TREATED TO ROCKWELL C 34-37.
- FINISH: NICKEL PLATED AFTER PART HAS BEEN ASSEMBLED WITH LOAD BEAM. SEE DRAWING C45\_4\_4A



C45\_4\_2



UNINCORPORATED ECN(s)

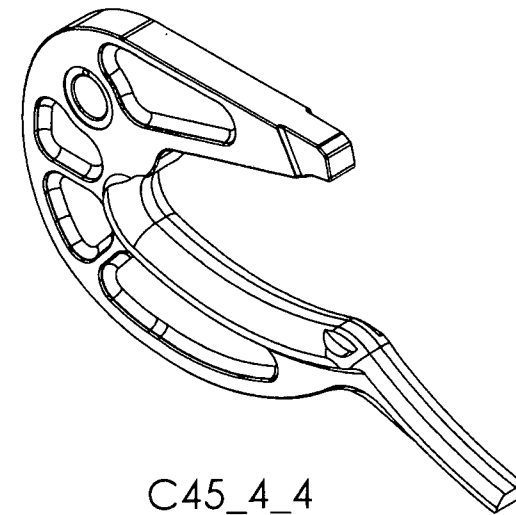
02703,

C45_4_2		TRUNNION C45-HOOK		△	△
PART NO.		DESCRIPTION		MAT'L	SPEC
QTY		PARTS LIST			
NEXT ASSY (S)		ORIGINAL DATE (MO-DA-YR)	05/14/97	APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
C45_4_4A		DRAWN BY	CHECKER		
		CSABA A. KODOR	CSABA A. KODOR		
		DRAWING APPROVAL	05/14/97		
		CSABA A. KODOR		TRUNNION C45-HOOK	
		CONTRACT NO.			
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°		SIZE	REV.
				B	N/C
				CAGE CODE	
				07MZ6	
				DWG. NO.	
				C45_4_2	
				SCALE	
				NONE	
				SHEET	1 OF 1

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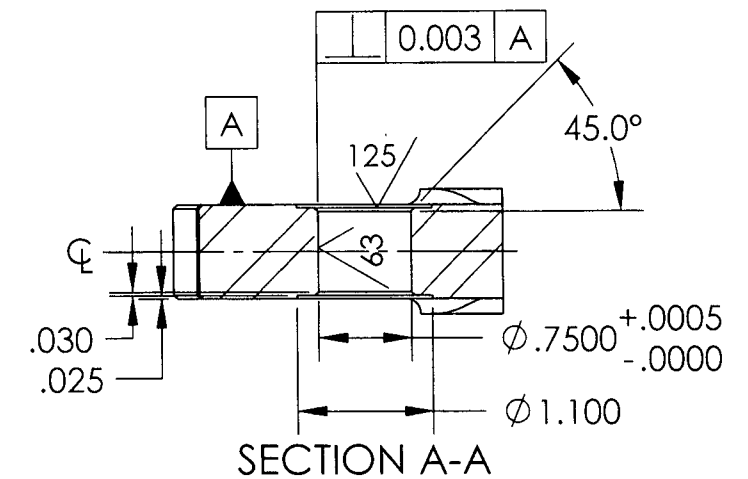
# NOTES:

- 1 MATERIAL: 4340 ANN ALLOY STEEL PLATE. FINISHED PART TO BE HEAT TREATED TO ROCKWELL C 53-56.
- 2 USE DXF PROFILE FOR PART CONTOURS
- 3 FINISH: NICKEL PLATED AFTER PART HAS BEEN ASSEMBLED WITH TRUNNION. SEE DRAWING C45\_4\_4A
- 4 BREAK UNSPECIFIED EDGES BY 0.02 X 45°

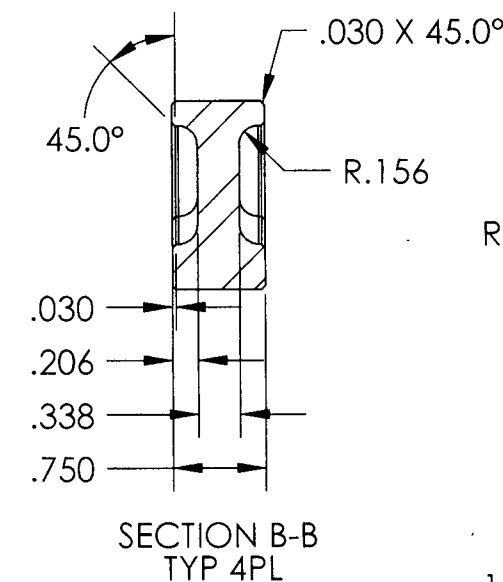


C45\_4\_4

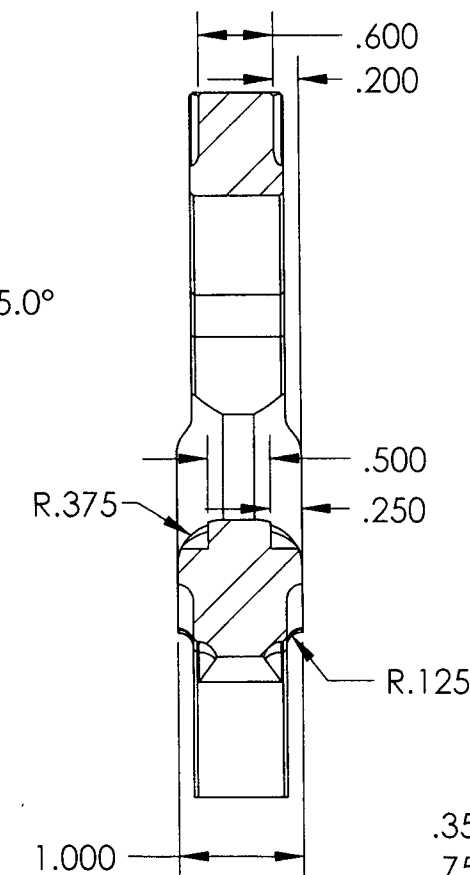
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	LAST PROTOTYPE REVISION: NONE	N/A	N/A
15	LAST CANAM RELEASE	03/22/07	AE
N/C	INCORPORATED ECN 02691	11/17/09	P. BRAVO



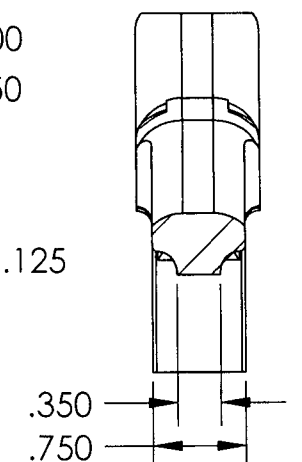
SECTION A-A



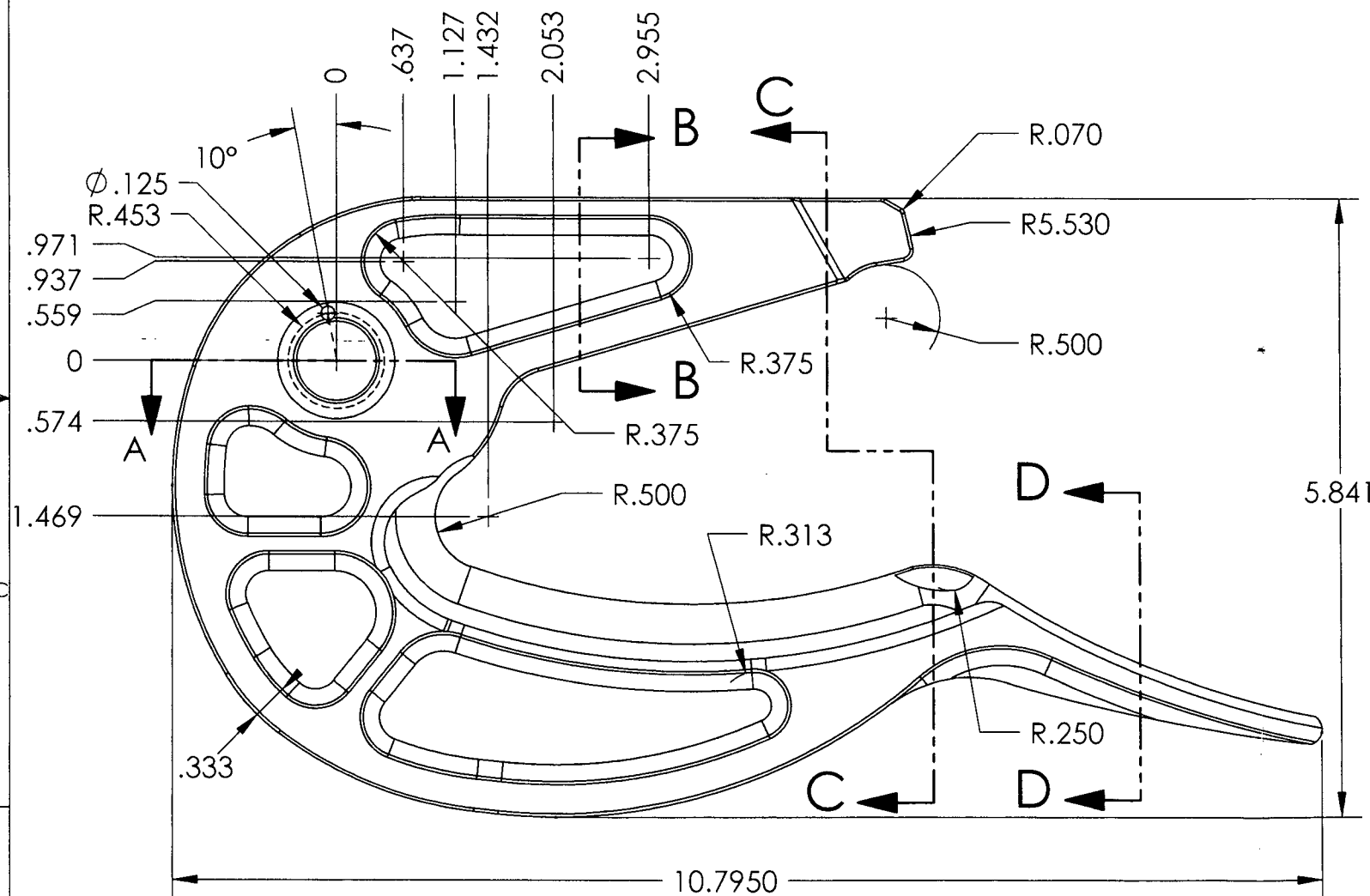
SECTION B-B  
TYP 4PL





SECTION C-C



SECTION D-D



				C45_4_4	LOAD BEAM C45-HOOK		
			FIND NO.	PART No.	DESCRIPTION	MAT'L	SPEC
QTY			PARTS LIST				
NEXT ASSY (S)			ORIGINAL DATE (MO-DA-YR)		05/07/97	APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
C45_4_4A			DRAWN BY	CHECKER			
			CSABA A. KODOR	CSABA A. KODOR			
			DRAWING APPROVAL				
			CSABA A. KODOR		06/27/00	LOAD BEAM C45-HOOK	
			CONTRACT No.				
			UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°				
SIZE		CAGE CODE		DWG. NO.		REV.	
B		07MZ6		C45_4_4		N/C	
SCALE NONE						SHEET 1 OF 1	

APICAL INDUSTRIES  
2608 TEMPLE HEIGHTS DR.  
OCEANSIDE, CA. 92056-3512 (760)724-5300

LOAD BEAM C45-HOOK

<b>APICAL</b> INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE- NO. 02897				SHEET 1 - OF 1	
	DWG NO. C45-4-4A		REV: NC	PREPARED BY N.CAP	DATE: 06/28/10	EFFECT ON DWG <input type="checkbox"/> INC. <input checked="" type="checkbox"/> UNINC.
	DWG TITLE: LOAD BEAM ASSY					
	APPROVED BY:	ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: CURRENT ORDER AND STOCK	
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE	REASON: CHANGED DIMENSIONS OF PART C45-4-3 PIN FROM 0.125x0.625 TO 0.125x0.875 (AS PER ECR 10-25)					

3	R	C45-4-3	1		PIN	90145A474	$\triangle 1$ $\triangle 4$
F/N	TC	PART NUMBER	C45-4-4A	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:						CHANGE CATEGORY	DER REVIEW REQUIRED
<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRUC <input type="checkbox"/> ICA <input checked="" type="checkbox"/> BOM						<input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

<b>APICAL</b> INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE NO. 02702				SHEET 1 OF 1	
	DWG NO. C45_4_4A	REV: N/C	PREPARED BY D.BARKER	DATE: 11/30/09	EFFECT ON DWG <input type="checkbox"/> INC. <input checked="" type="checkbox"/> UNINC.	
	DWG TITLE: C45 LOAD BEAM ASSY					
	APPROVED BY:	ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: CURRENT ORDER	
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE	REASON: REVISED FONT SIZE IN NOTE 3 PER ECR 09-105					

### SHEET 1, ZONE A1, NOTE 3 IS:

- 3 IDENTIFY IAW MPP-120. LASER ENGRAVE CENTURY GOTHIC, 12 POINT ASSEMBLY PART NUMBER AND REVISION.

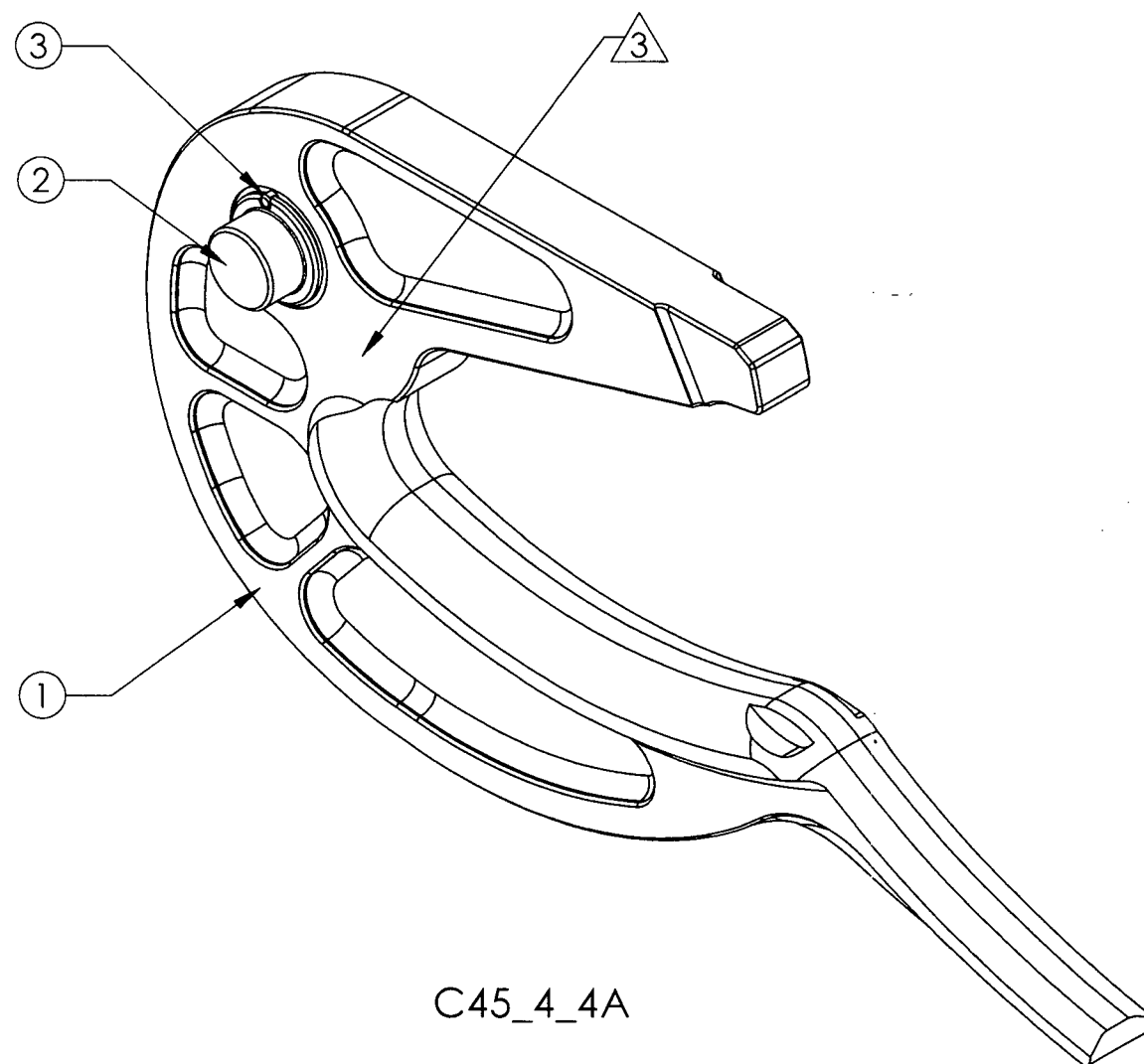
F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL	SPECIFICATION
DOCUMENTS EFFECTED:				<input type="checkbox"/> MDL <input type="checkbox"/> INSTALL INSTRUC <input type="checkbox"/> ICA <input type="checkbox"/> BOM	CHANGE CATEGORY <input type="checkbox"/> MAJOR <input checked="" type="checkbox"/> MINOR	DER REVIEW REQUIRED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	LAST PROTOTYPE REVISION: NONE		N/C
N/C	INITIAL RELEASE	11/17/09	P. BRAVO

## NOTES:

- 1 PRESS FIT F/N 2 INTO F/N 1 PRIOR TO PLATING. MATCH DRILL .125" DIAMETER HOLE INTO TRUNION, F/N 2, THROUGH LOAD BEAM, F/N 1, AND INSTALL PIN, F/N 3.
- 2 FINISH: NICKEL PLATE IAW MIL-C-26074 CLASS 2, GRADE B, .001" THICKNESS
- 3 IDENTIFY IAW MPP-120. LASER ENGRAVE CENTURY GOTHIC, 9 POINT ASSEMBLY PART NUMBER AND REVISION.
- 4 VENDOR: McMASTER CARR



**UNINCORPORATED ECN(s)**

02702, 02897,

	1	3	C45_4_3	PIN	90145A472	1	4
	1	2	C45_4_2	TRUNNION C45-HOOK			
	1	1	C45_4_4	LOAD BEAM C45-HOOK			
			C45_4_4A	C45 LOAD BEAM ASSY			2
	C45_4_4A	FINI NO.	PART NO.	DESCRIPTION	MAT'L	SPEC	
QTY		PARTS LIST					
NEXT ASSY (S)		ORIGINAL DATE (MO-DA-YR)	11/17/09	<b>APICAL INDUSTRIES</b> 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300  <b>C45 LOAD BEAM ASSY</b>			
		DRAWN BY	CHECKER				
		D.BARKER	S.MONTGOMERY				
		DRAWING APPROVAL	P. BRAVO 11/17/09				
		CONTRACT No.					
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°		SIZE	CAGE CODE	DWG. NO.	REV.
				B	07MZ6	C45_4_4A	N/C
				SCALE NONE		SHEET 1 OF 1	